

Appendix H

Water Supply Assessment Report

Prepared by W2 Design Inc.



CITY OF CALEXICO

FINAL

Water Supply Assessment Report

For

**111 Calexico Place
Calexico, California**

Prepared for:

City of Calexico
608 Heber Avenue
Calexico, CA 92231

Prepared by:



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September 2008



DRAFT
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Date

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Date

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Date



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A. Acknowledgements

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B. Copyright Note

This report was prepared specifically for the 111 Calexico Place Project using primarily data documented in the 2000 UWMP of IID, 2007 Draft UWMP of the City of Calexico, City of Calexico Emergency Response Plan, the City of Calexico Service Area Plan, and other supporting documents, and is the property of W2 Design Inc. This report shall remain the ownership of W2 Design Inc. and shall not be used for any other purpose, unless expressed and written, otherwise.

C. References:

Excerpts of information documented in the following reports have been incorporated into this Water Supply Assessment Report:

- (1) 2000 Urban Water Management Plan for the City of Calexico dated Oct 2001;
and 2007 Calexico UWMP draft dated March 2007.
- (2) City of Calexico Service Area Plan, dated May 31, 2006.
- (3) City of Calexico Water Treatment Plant Water System Emergency Response
Plan, dated June 22, 2005.
- (4) 111 Calexico Place, Specific Plan, dated July 2007.



- (5) "Estimated Use of Water in the United States in 2000" USGS. 17 Sept 2008
<pubs.usgs.gov/circ/2004/circ1268/htdocs/table07.html>.
- (6) Water/Sewer, Master Plan; Jasper Crossing at Calexico Mega Park, dated March 2007.
- (7) City of Calexico 111 Calexico Place Sub-Area Utilities Study, dated April 2008.

D. Definition of Acronyms and Terms

Agency	-	Imperial Irrigation District
CEQA	-	California Environmental Quality Act
CFS	-	Cubic feet per second
CHDS	-	California Department of Health Services
City	-	City of Calexico
CWD	-	Calexico Water District
EPP	-	Emergency Preparedness Plan
ERP	-	Emergency Response Plan
IID	-	Imperial Irrigation District
Imperial Unit	-	Imperial Irrigation District Irrigation Service Area
Lead Agency	-	City of Calexico
MFR	-	Multiple-Family Residential
MWD	-	Metropolitan Water District
Project	-	111 Calexico Place Project
PUD	-	Plan Unit Developments
QSA	-	Quantification Settlement Agreement



SB 221	-	Senate Bill 221
SB 610	-	Senate Bill 610
SCAG	-	Southern California Association of Governments
SDCWA	-	San Diego County Water Authority
SDWA	-	Safe Drinking Water Act
SFR	-	Single Family Residential
SOI	-	Sphere of Influence
USEPA	-	United States Environmental Protection Agency
UWMP	-	Urban Water Management Plan
VA	-	Vulnerability Assessment
WSA	-	Water Supply Assessment
WTP	-	Water Treatment Plant



E. Executive Summary

This Water Supply Assessment Report was prepared for the City of Calexico by W2 Design, Inc. for the 111 Calexico Place Project. The site is proposed to be developed with Commercial Highway Land uses which would include a Casino, retail establishments, restaurants, hotels, offices, and office tech in an approximately 232-acre site. Build out of the Project will occur in five phases, spanning 10 to 15 years. The proposed development is located in the City of Calexico, California, more specifically in the southwest corner of Highway 111 and Jasper Rd.

As part of the parameters and requirements specified in Senate Bill 610, the project sponsor is required to prepare a Water Supply Assessment Report to address and determine the adequacy and sufficiency of current and future water supplies to meet current and future demands.

This Water Supply Assessment Report is the culmination of historical and statistical research of Imperial Valley's water resources dating back to when and how the Imperial Irrigation District was formed, as well as its operational capacity. A detailed discussion of the Imperial Irrigation District's history is critical in understanding the water sources that have been secured through contracts, agreements, and ultimately court cases. This rich history provides a background to understanding the current water carrying and supply capacity which the Imperial Valley is entitled. In addition, this report offers a statistical analysis of historical, current, and future data to evaluate the measures taken by the City of Calexico, Imperial Irrigation District, and Project sponsor to adequately ensure water supply not only to the City, but also the 111 Calexico Place Project.



The conclusions drawn in this report are based on factual data supported by substantial research. The Imperial Irrigation District has more than adequate supply of water from the Colorado River to supply its customers. Because only 2% of the imported water supply is for local municipalities, there is ample supply even in worst case scenario projections. The remaining 98% is for agriculture uses. The Imperial Irrigation District's allotment of water from the Colorado River far exceeds its uses. Further, the City's water distribution and treatment capacity are able to handle the additional loads brought on by the proposed project. The City is diligently working on an upgrade program to ensure quality water services for its residents and businesses through the year 2030. The analysis of supply and demand within the region indicates that the City is capable of meeting its water distribution responsibilities. However the construction phasing of this Project is 5 to 10 years ahead of the master plan facilities for water and sanitary sewer necessary to serve the Project. It will be necessary to construct interim systems connected to the City System which will have to be ultimately connected to the Master Plan System when they become available. Therefore, it is the conclusion of this report that water supplies during the next 20 years are sufficient to meet the additional water demand made by the proposed Project.



1.0 Introduction ⁽¹⁾

Since January 1, 2002, Senate Bill 610 requires the preparation of a Water Supply Assessment (WSA) for any project that is qualified under its definition of “Project”. The WSA describes the current and proposed water demands in project areas. Local agencies determine the adequacy and sufficiency to meet the supply with the demand.

1.1 Purpose

This Water Supply Assessment (WSA) has been prepared to assist the City of Calexico (City) in meeting the requirements for Senate Bill 610 (SB610). The City is referred to as the Lead Agency. The City of Calexico is located north of the International Boundary with Mexico (See Figure 1).

This Water Supply Assessment describes the relationship between projected demands on the City’s water supply and the availability of that supply under normal and dry years. The WSA is required by SB 610 and Senate Bill 221 (SB 221) and is designed to assist in water supply planning efforts.

The WSA is a comprehensive document which is prepared to assist the City Council in making decisions related to land use and water supply from the present until 2030. The WSA proposes a strategy for utilizing the allocation of the Imperial Irrigation District (IID), the water supplier for the City, which will be referred to as Agency, to meet the water supply demands associated with implementation of the 111 Calexico Place Project (Project).

Based upon the information before it, the City Council may determine whether projected water supplies will be sufficient to satisfy the demands of the proposed project in addition to existing and planned future uses. The City must include the assessment in the environmental



documents prepared for designated projects pursuant to the California Environmental Quality Act (CEQA).

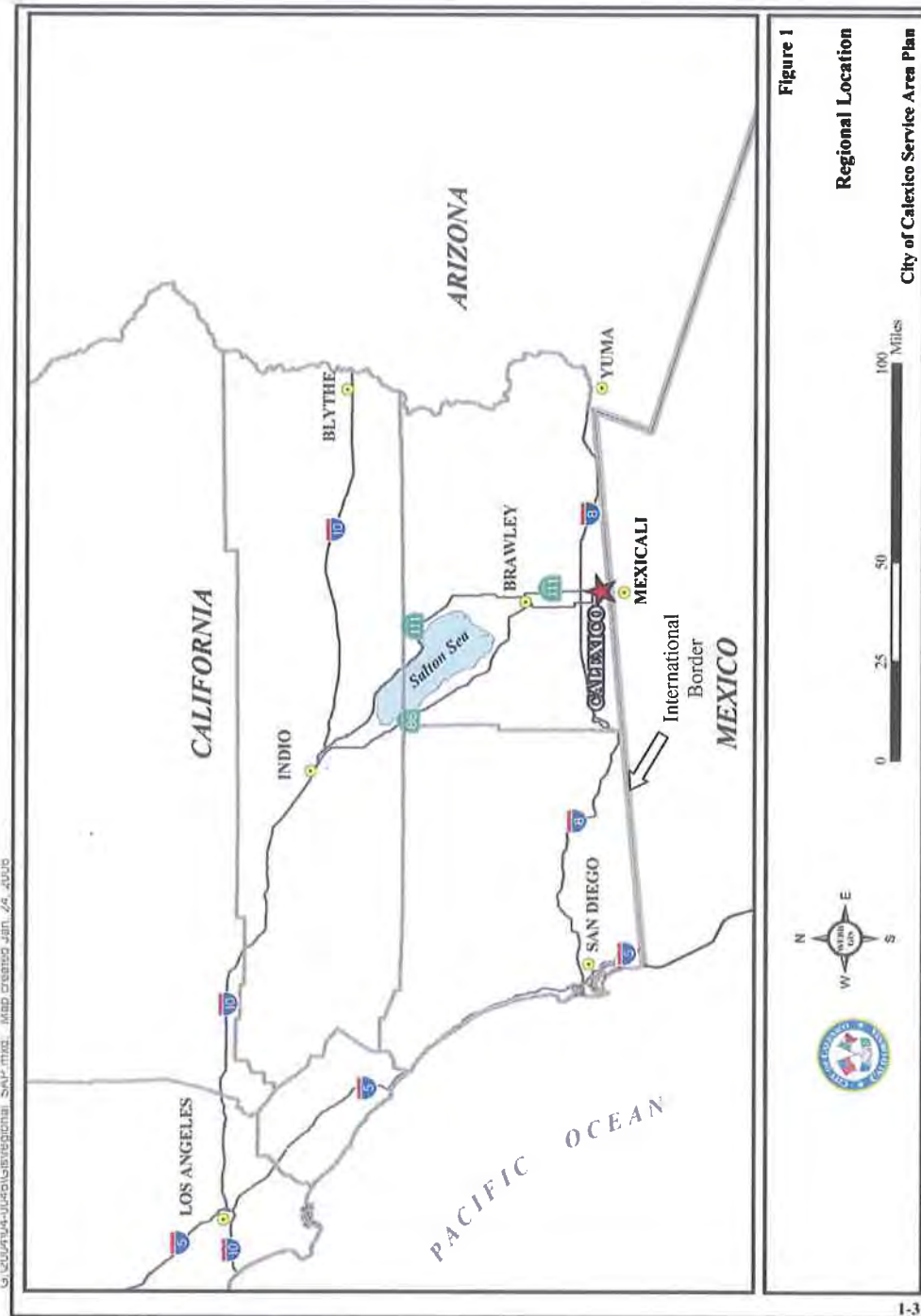


Figure 1 – Regional Location ⁽⁶⁾



1.2 Scope of Analysis

The WSA includes a review of the City's water supplies with respect to the Project. The water demands created by this development are then related to the City's available water supply in normal, single dry and multiple dry years and the sufficiency of that supply to meet the demand is analyzed. This report used single reduced demand and multiple reduced demand years in place of single dry and multiple dry years since the City has not experience a dry year⁽¹⁾. The WSA is based upon and intended to fulfill the requirements of SB 610 described below.

1.2.1 Senate Bill 610

SB 610 (Costa) became effective January 1, 2002. The stated intent of SB 610 is to strengthen the process by which local agencies determine the adequacy and sufficiency of current and future water supplies to meet current and future demands. SB 610 amended the California Public Resources Code to incorporate Water Code findings within the CEQA process for certain types of projects. SB 610 amended the Water Code to broaden the types of information included in Urban Water Management Plans (UWMP) (Water Code Section 10620 et. Seq.) and to add Water Code Part 2.10 Water Supply Planning to support Existing and Planned Future Uses (Section 10910 et. Seq.). Part 2.10 clarifies the roles and responsibilities of the Lead Agency under CEQA and the "water supplier" with respect to describing current and future supplies compared to current and future demands.

1.2.1.1 Water Code Part 2.10

Water Code Part 2.10 defines the "Project" that is subject to a WSA and the Lead Agency's responsibilities related to the WSA. A WSA is required for:



1. A proposed residential development of more than 500 dwelling units;
2. A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space;
3. A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space;
4. A proposed commercial office building employing more than 500 rooms;
5. A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area;
6. A mixed-use development that includes one or more of the uses described above;
7. A development that would demand an amount of water required by a 500-dwelling-unit project, and

Under Part 2.10, the Lead Agency prepares a WSA and identifies the affected water supplier and research whether the new demands are included in the suppliers' Urban Water Management Plan. If the UWMP includes the demands, it may be incorporated by reference. (Water Code Section 100912(c)).

The UWMP adopted by the City was prepared in 2001 by the Imperial Irrigation District. The UWMP was prepared and approved prior to the adoption of SB 610. While the Agency is a wholesale water supplier to the City, it also acts as a forum through which local governments in Imperial County coordinate water policy. Thus the Agency prepared an UWMP applicable to all participating jurisdictions in Imperial County. The UWMP includes information required by SB 610. A draft 2005 update has been prepared and is in circulation for approval. This report



references the adopted and draft UWMP to provide the information of the City's water supplies for the 111 Calexico Place Project.

1.2.1.2 The Urban Water Management Planning Act

The Urban Water Management Planning Act requires the supplier to document water supplies available during normal, single dry, and multiple dry water years during a 20-year projection and the existing and projected future water demand during a 20 year projection. The Act requires that the projected supplies and demands be presented in 5-year increments for the 20-year projection. In order to comply with the SB 610 requirements, the WSA includes the following information:

- A description of the water service area including climate, current and projected population and other demographic factors that affect water management planning. Demographic data is presented in 5-year increments for 20-years.
- A description and quantification of the existing and planned water sources.
- A description of the reliability and vulnerability of the water supply to seasonal or climatic shortages in the average water year, single dry water year and multiple dry water year. Contingency plans which include demand management are discussed.
- A description of all water supply projects and water supply programs that may be undertaken by the City, and Agency, to meet the total projected water use.
- A description of demand management measures employed and scheduled to be employed.



1.2.2 The City of Calexico Service Area Plan⁽²⁾

This Service Area Plan provides an analysis of how the created demand by future developments within the City's Service Area would be met for the different services and facilities. The purpose of this Plan is to address how public facilities will be extended to the area outside the City limits and within the Sphere of Influence.

This Service Area Plan essentially requires the City to undertake analysis consistent with SB 610 for the project envisioned by its current General Plan Update. The projected population growth utilized to predict future demands and the needs of new facilities was based on the 2005 Proposed General Plan Update prepared by Albert A. Webb Associates.

1.2.2.1 Project Compliance with Existing Regulations

The Project is required to comply with Senate Bill 610. In October of 2001, Senate Bill SB 610 and SB 221 were signed into California state law with an effective date of January 1, 2002. SB 610 amended existing legal requirements that confirmation of water supply sufficiency is achieved through an analysis of the water purveyor's existing and future water sources and existing and projected water demand in relation to a "Project" as defined by SB 610, resulting in the production of a project specific WSA. The WSA also requires additional analysis if any portion of the water purveyor's water supplies include groundwater.

The requirements of SB 610 are triggered for projects going through the California Environmental Quality Act (CEQA) process. During the CEQA process, the City or County processing the project is required to request a WSA from the identified water purveyor for any "Project," as defined by SB 610. SB 610 allows the water purveyor 90 days to prepare the project specific WSA.



As mentioned in passing, SB 610 defines a “Project” as:

1. A residential subdivision of 500 dwelling units or more;
2. A shopping center or business establishment employing more than 1,000 persons or have more than 500,000 square feet (sq.ft.) of floor space;
3. A commercial office building employing more than 1,000 persons or having more than 250,000 sq. ft. of floor space;
4. A hotel or motel having more than 500 rooms;
5. An industrial, manufacturing, or processing plant or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 sq. ft. of floor space;
6. A mixed use project including one or more of the aforementioned projects or any other project demanding an amount of water equivalent to or greater than the amount of water required by a 500 dwelling unit project.

SB 221 requires large subdivisions (greater than 500 dwelling units) to submit a water supply verification issued by the water supplier, stating that sufficient water supplies will be available to serve the development during normal, single-dry, and multiple-dry years within a 20-year projection. The verification is a mandatory condition placed on the subdivision’s tentative map.

The Project proposes the development of Commercial Highway (CH) land uses, including a Casino, retail establishments, restaurants, hotels, offices and office tech., and meets the “Project” definition criteria 2, 3 and 6, above. Consequently, the Project is required to have a WSA prepared by the Calexico Water District (CWD) and a water supply verification issued by the City is also required.



1.2.3 Summary of the Project⁽⁴⁾

The project site is currently zoned Planned Development (PD), and has been approved as the International Center Specific Plan. The 111 Calexico Place Project is located in Imperial County, in the City of Calexico (See Figure 2). The proposed development is described briefly below and the proposed future new developments are shown on Figure 3.

1.2.3.1 Project Location and Setting ⁽⁴⁾

The proposed project site is located in the City of Calexico, which is located 230 miles southeast of Los Angeles, 125 miles east of San Diego, 260 miles west of Phoenix, and adjacent to the City of Mexicali, Baja California Mexico (See Figure 1). The 232-acre project site abuts the northwestern corner of the city limits, approximately 3 miles north of the U.S. and Mexico border and approximately 4.5 miles south of Interstate 8 (I-8). The site is bounded by Jasper Road to the north, Highway 111 to the east, the Dogwood and Central Main Canal to the south and west (See Figure 4).

The project site is located in a rural area with agricultural fields occupying the parcels to the north, and west of the project site. Adjacent properties are flat-lying and at approximately the same elevation as the project site. A radio station with a broadcast transmission tower and vacant land are located south of the Dogwood and Central Main canals. Commercial developments (such as Toys “R” Us and Wal-Mart) are located southeast of the site, across State Highway 111 and comprise the primary land uses south of the canals. Moving further south, the landscape becomes more urban in character and land uses include mostly retail with some light industrial/warehouse uses. Due to the rural nature of the project site and its adjacent parcels, development in the area tends to be very low density (farmhouse surrounded by large agricultural



fields) and building heights generally do not exceed two stories. The project site has been designated a Commercial Highway Specific Plan with a primary component of land uses designated for a Reservation Casino and entertainment facility. The Project site would be zoned Specific Plan Overlay Zone. The Commercial Highway Specific Plan will be formulated to support land uses conducive to the commercial highway opportunities which may include hotels/conference facilities, restaurants, specialty retail, “big box” retail, personal services, auto service station/mini-mart, car wash, executive suites, professional services, business support services, and recreation/entertainment.

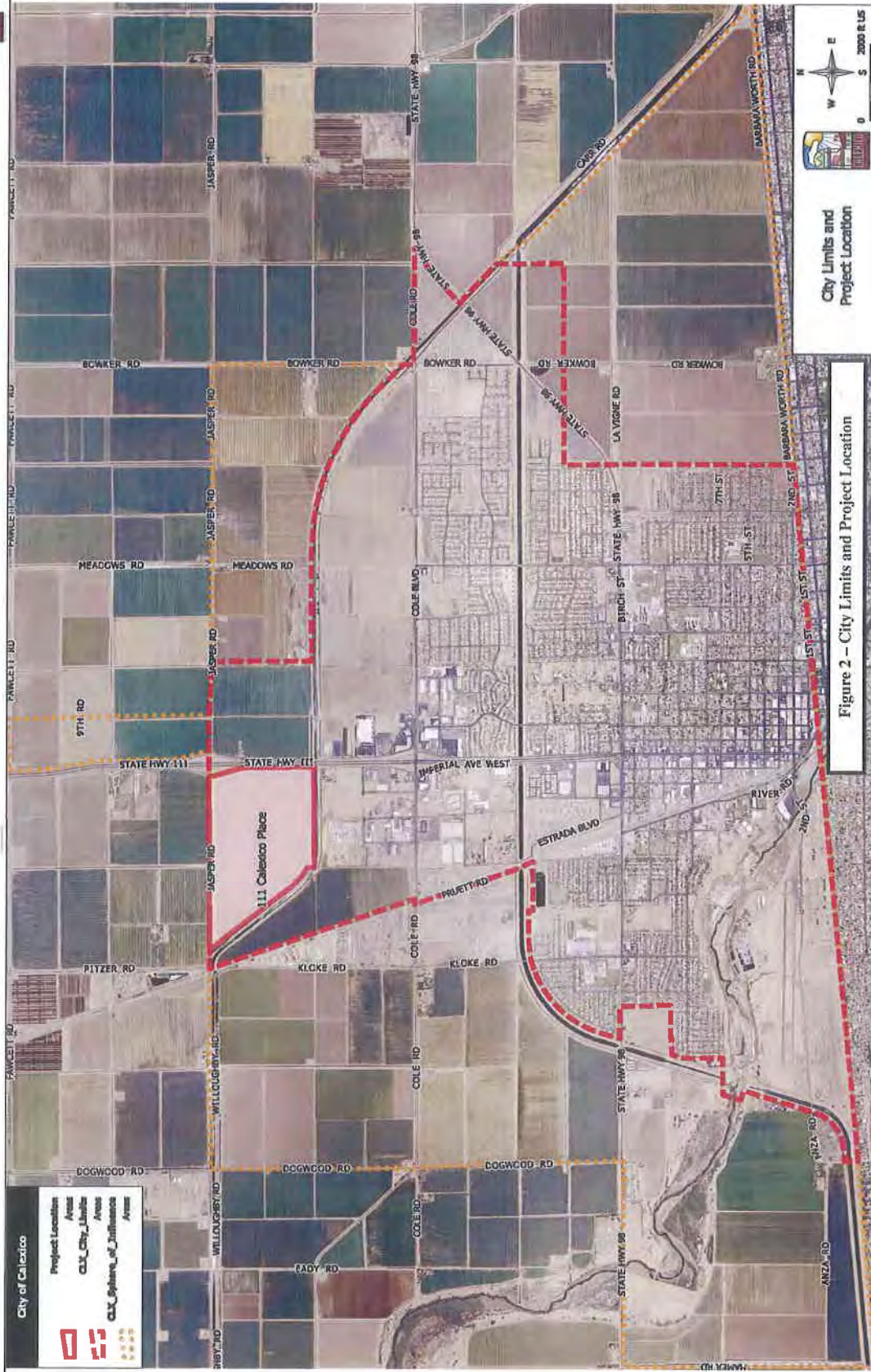
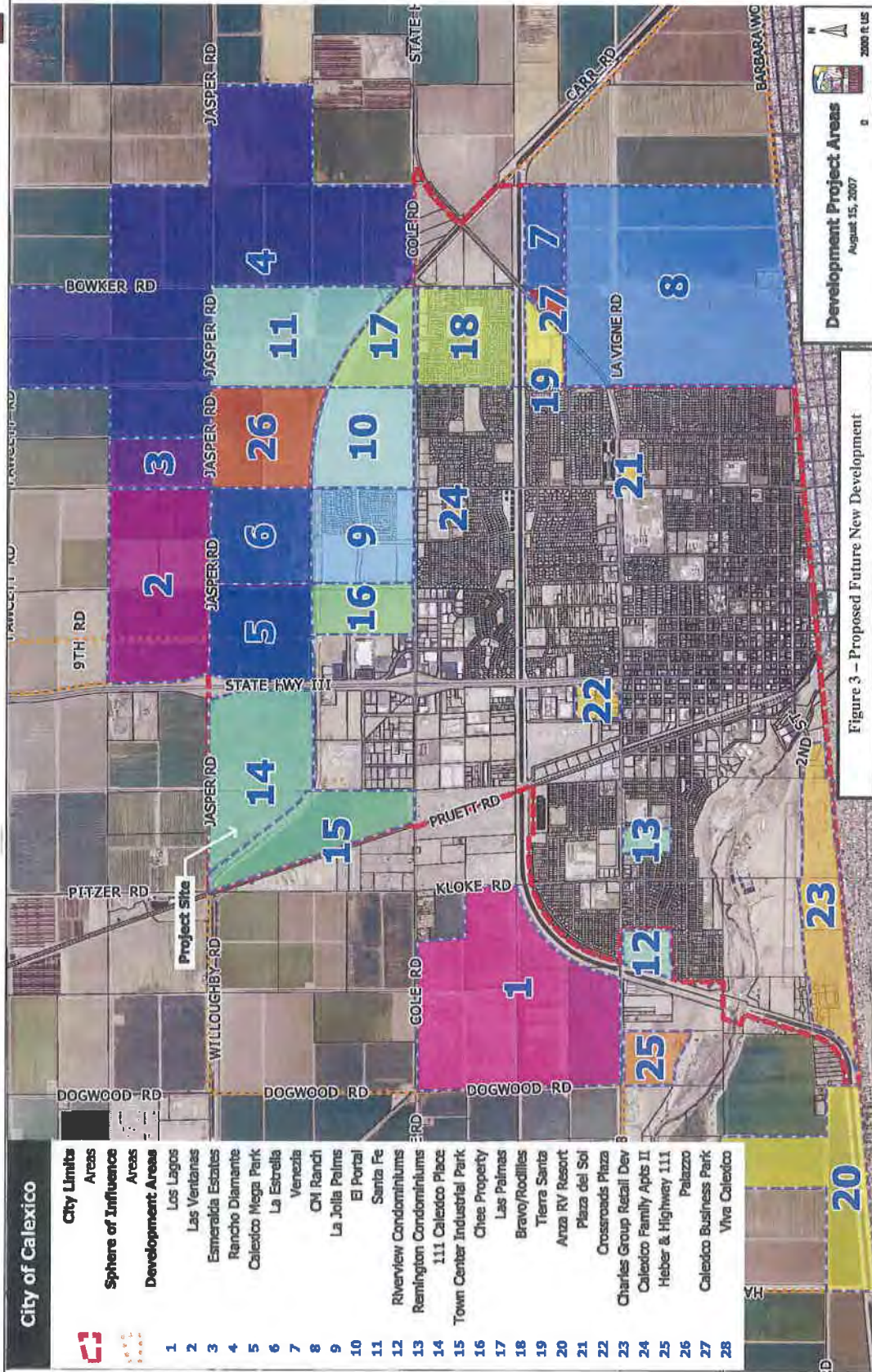


Figure 2 – City Limits and Project Location



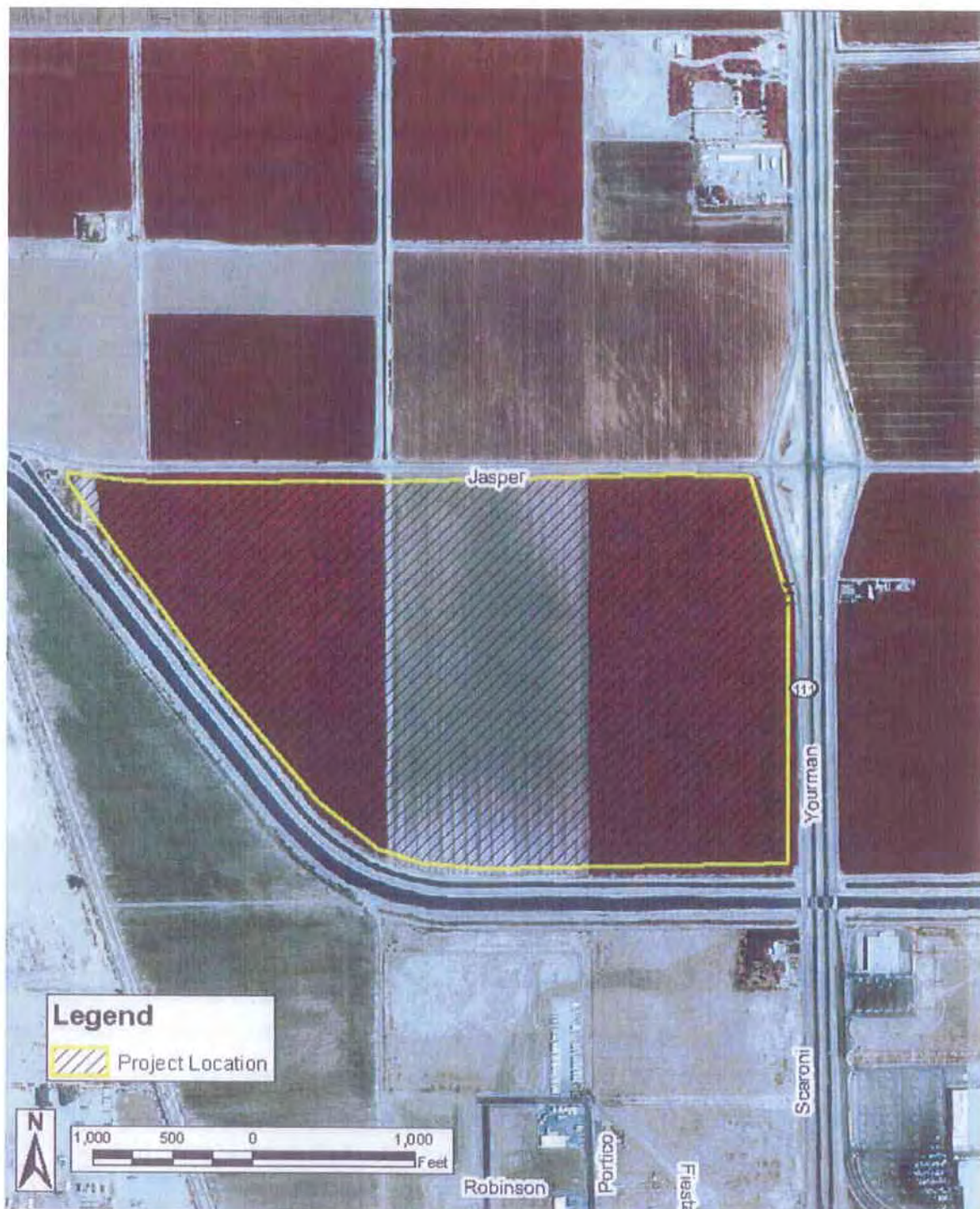
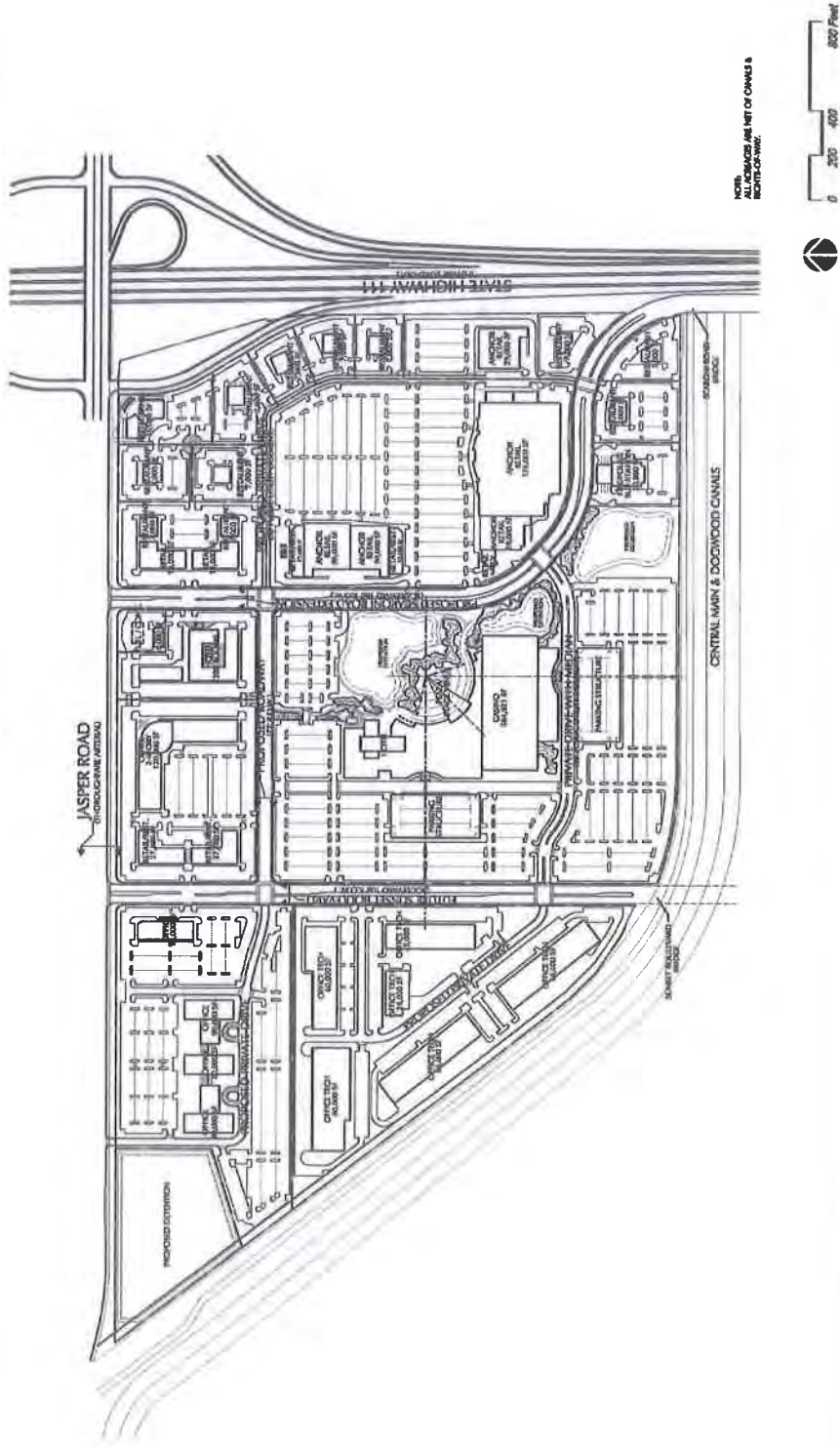


Figure 4 – Project Location ⁽⁴⁾



1.2.3.2 Project Description ⁽⁴⁾

The project applicant (Hallwood Calexico Investments, LLC) is seeking entitlement to develop the site with Commercial/Industrial uses (See Table 1) in a total of four phases of construction which could span a period of 10 years (See Figure 5). During Phase 1 the developments consist of Retail, Fast food restaurants with drive thru, Sit Down restaurants, a Casino, Retail, Hotel, and Meeting/Assembly-Event Center. Phase 2 will proceed with the construction of Retail, Hotel, Office, and Restaurants. For Phase 3 the development will be Office, and for Phase 4 it will be Office Tech. (See Table 2)



CONCEPTUAL SITE PLAN
111 CALEXICO PLACE - JASPER ROADS & 111 SMC
CALEXICO, CALIFORNIA

Figure 5 - Conceptual Site Plan ^(A)

Job #: 07138
File Name: Site Plan.dwg
Date: 07/05/08
Created by: ADR/MJM



GFF Planning
2400 Riverwood Blvd
Suite 100
Bakersfield, CA 93311
Phone: 805.338.7200

214.433.8807
Bakersfield, CA
www.gffplanning.com



Table 1: Proposed Uses And Square Footages A ⁽⁴⁾

<u>Land Use</u>	<u>Total Square Footage</u>
a. <u>Entertainment Complex</u>	434,621 SF (Excluding Hotel)
• Gaming Area (Casino)	93,880 SF
• Restaurants and Lounges	55,000 SF
• Retail	8,000 SF
• Meeting and Assembly Areas	46,000 SF
• Entertainment and Recreation	38,660 SF
• Employee Facilities	193,081 SF
• Hotel	200 Rooms
b. <u>Rest of Specific Plan Area</u>	1,256,000 SF (Excluding Hotel)
• Hotel	200 Rooms
• Retail	411,000 SF
• Restaurant	110,000 SF
• Office	395,000 SF
• Office Tech	340,000 SF

1.2.3.3 Phasing and Site Plan ⁽⁴⁾

Implementation of the Specific Plan will occur within four phases over a period of 10 years. In addition, a tract map is also being proposed to subdivide the Specific Plan area into 25 separate lots to facilitate the phased construction of those commercial uses being proposed. The following describes those commercial uses being proposed by each phase and subdivided lot/parcel.

Table 2: Proposed Uses And Square Footages B ⁽⁴⁾

<u>Phases and Uses</u>	<u>Expected Timing</u>	<u>Proposed Lots.</u>
<u>Entertainment Complex</u>	Year 2008 to 2012	Lot 13
• Gaming Area		
• Entertainment and Recreation		
• Hotel		
• Parking Structure		
• Plaza		
• Retention Basin		



<u>Phase 1</u>	Year 2008 to 2010	Lots 7 to 12, and 14 to 25
<ul style="list-style-type: none">• Resturant• Retail		
<u>Phase 2</u>	Year 2010 to 2012	Lots 4, 5, & 6
<ul style="list-style-type: none">• Retail• Hotel• Office• Resturant		
<u>Phase 3</u>	Year 2011 to 2014	Lots 1 & 2
<ul style="list-style-type: none">• Office• Retention Basin		
<u>Phase 4</u>	Year 2012 to 2018	Lots 3
<ul style="list-style-type: none">• Office Tech		

The following describes these proposed commercial highway uses:

Entertainment Complex

The Entertainment Complex will be located within the central portion of the overall Specific Plan area and will include casino activities. If the Bureau of Indian Affairs has approved the trust application for the United States to take this land into trust for the benefit of the Manzanita Tribe pursuant to Section 20 of the Indian Gaming Regulatory Act and the Manzanita Tribe has an approval compact with the State of California to operate Class III gaming on this land, then the casino will be permitted to operate gambling activities, including slot machines, gaming tables, video gaming terminals, etc. The Casino Complex will also include restaurants and lounges; retail stores; meeting and assembly areas; entertainment and recreation; a hotel; and facilities for employees. A four-story 3,000 space parking structure will also be constructed along the southern boundaries. A large plaza/stage venue will be provided near the center of the complex. The aforementioned hotel, retail stores and restaurants, and onsite retention basin will be located along the plaza/stage venue area. At this writing, it is



expected that restaurants could be either sit-down or drive-through. Retail stores will primarily sell commonly-used and specialty consumer goods and merchandise, such as department stores, apparel stores, sporting goods, and furniture stores. The hotel will offer lodging and short-term accommodations for travelers and could offer a wide-range of services, from overnight sleeping space to full-service hotel suites. They could also offer services in conjunction with other activities, such as entertainment and recreation, food service, laundry service, etc.

Phase 1

The Phase 1 area is located along the eastern boundaries of the Specific Plan, fronting along SH-111 and bordered by Jasper Road to the north and the Central Main and Dogwood Canals to the south. The Phase 2 and Casino Complex areas are located east of the Phase 1 area. This Phase of development will include multiple pads and parcels for a large anchor retail store, other retail stores, several restaurants, and large parking areas. The retail stores and restaurants will provide similar goods and services and described above.

Phase 2

The Phase 2 area is located along the northern boundaries of the Specific Plan, fronting along Jasper Road. The Casino Complex and Phase 1 areas are located south and east of the Phase 2 area, respectively. The Phase 3 area is located to the west. The Phase 2 area of the development will include multiple pads and parcels for retail stores, restaurant, hotel, and a two-story office building. The retail stores, restaurant, and hotel will provide similar goods and services as described above. The office building will provide space for administrative, personal and professional services, business support, and executive offices.



Phase 3

The Phase 3 area is located along the northwestern boundaries of the Specific Plan, fronting along Jasper Road. The Phase 2 and Phase 4 areas are located east and south of the Phase 3 area, respectively. This phase of development will include multiple pads and parcels for office buildings and a retention basin. The office buildings will provide space for administrative, personal and professional service, business support, medical service, and executive offices.

Phase 4

The Phase 4 area is located along the western boundaries of the Specific Plan. The Phase 3 and Casino Complex areas are located south and east of the Phase 4 area, respectively. This phase of development will include multiple pads and parcels for office technology buildings which will manufacture and test electronic and digital products. The office technology buildings could also provide space for administrative, personal and professional service, business support, medical services, and executive offices.

1.2.3.4 Fair Share

Raw water will be provided by the Imperial Irrigation District and treated water and sewer services will be provided by the City of Calexico Utility Services Department. The Project proponent will be required to construct its fair share of receiving master planned facilities, or pay its fair share for construction as agreed to by the City of Calexico.



2.0 Water Service Area and Water Supplies

This chapter provides a discussion of the Agency's Water Service Area; Project Water Service Area, the wholesale water supply available to the Agency and water rights the City has for the supply from the Agency. This section includes excerpts from the 2000 UWMP prepared by the Agency and adopted by the City, and from the 2007 Draft UWMP for the City of Calexico.

2.1 Imperial Irrigation District⁽¹⁾

The Imperial Irrigation District's irrigation service area lying entirely within Imperial County is divided into four units: Imperial, West Mesa, East Mesa, and Pilot Knob, with a gross acreage of 1,061,637 acres.

The source of virtually all surface waters in Imperial County is the Colorado River. The water is diverted from the Colorado River at the Palo Verde Weir north of Blythe by the Palo Verde Irrigation District and at the Imperial Dam through the All American Canal headwork's and desilting basins by the Imperial Irrigation District and the Bard Irrigation District into the All American Canal for use in the Bard, Imperial and Coachella Valleys.

The Urban Water Management Plan's water supplier service area is located within the Imperial Valley and is defined as the Imperial Unit of the Imperial Irrigation District's Irrigation Service Area (Imperial Unit). The Imperial Unit includes the urban area of the City of Calexico as well as the areas of the Cities of Brawley, El Centro and part of the Imperial County's unincorporated area. The Management Plan's water supplier service area, also known as the Imperial Unit, has a total area of 694,346 acres. See Figure 6 for Imperial Unit boundaries.

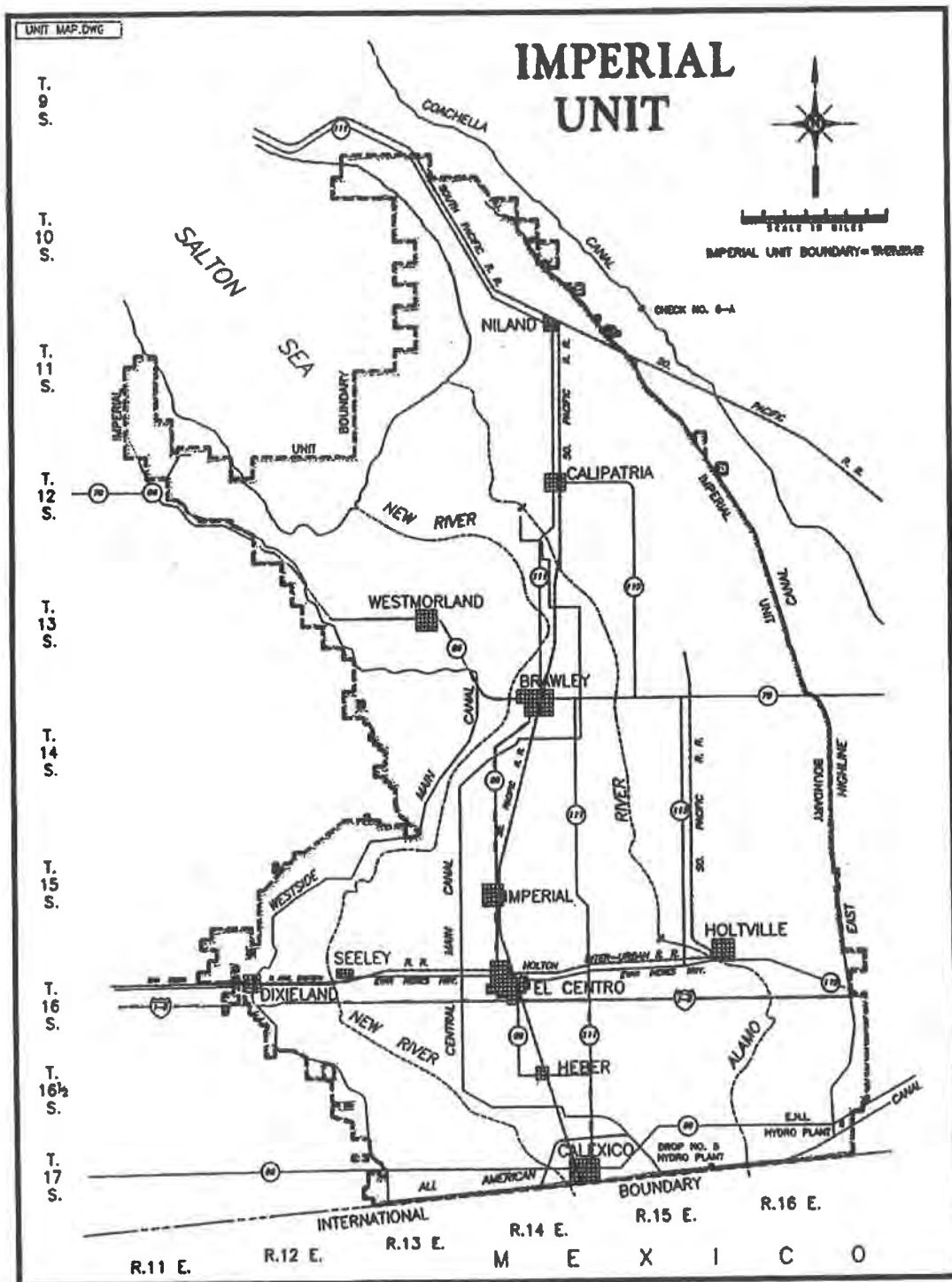


Figure 6 – Imperial Unit Service Area⁽¹⁾



The Agency documents its supply availability under normal and dry year conditions every 5 years in an Urban Water Management Plan, the most recent update is a draft prepared in 2007 by the Lead Agency.

The document provides information on the water supply that the City can expect from the Agency.

The 2000 UWMP is a comprehensive discussion of the Agency's water supply. The UWMP predicts the total amount of water available to the Agency's system under the normal, single dry and multiple dry years. This total amount of available water is independent of hydrologic conditions and includes allowances for water rights allocated to other agencies and contractors.

Developments have occurred since the UWMP was published. The developments do not affect the Agency's current water rights and there is currently no activity pending before the SWRCB that would affect the Agency's ability to divert water under its current permits.

2.2 The Agency's Water Rights⁽¹⁾

The Agency depends solely on the Colorado River for surface water inflows. The Agency imports raw Colorado River water and distributes it primarily for agricultural purposes. The Agency also delivers untreated flow for municipal and industrial uses. Municipal and/or industrial users treat the raw water to meet state and federal drinking water standards before distribution to urban users.

Rainfall is less than three inches per year and does not contribute to the Agency's water supply, although at times it may reduce agricultural water demand. The groundwater in the Imperial Unit is of poor quality and is generally unsuitable for domestic or irrigation use.



The Imperial Irrigation District was formed in 1911 to acquire properties of the bankrupt California Development Company and its Mexican subsidiary. By 1922, the Imperial Irrigation District had acquired 13 mutual water companies, which had developed and operated distribution canals in the Imperial Valley. By the mid-1920s, the Imperial Irrigation District was delivering water to nearly 500,000 acres. Since 1942, water has been diverted at Imperial Dam on the Colorado River through the All- American Canal, both of which the Imperial Irrigation District operates and maintains.

The Imperial Irrigation District's rights to divert Colorado River water are long standing. Imperial Irrigation District holds legal titles to all its water and water rights in trust for landowners within the district (California Water Code §§20529 and 22437; *Bryant v. Yellen*, 447 U.S. 352, 371 (1980), fn.23.). Beginning in 1885 a number of individuals, as well as the California Development Company, made a series of appropriations of Colorado River water under California law for use in the Imperial Valley. Pursuant to then-existing California laws, these appropriations were initiated by the posting of public notices for 10,000 cfs each at the point of diversion and recording such notices in the office of the County Recorder. The individual appropriations were subsequently assigned to the California Development Company, whose entire assets, including its water rights, were later bought by the Southern Pacific Company.

After the Imperial Irrigation District was formed in 1911, the Southern Pacific Company conveyed all of its water rights to the Imperial Irrigation District on June 22, 1916. The Imperial Irrigation District's predecessor right holders made reasonable progress in placing their pre-1914 appropriative water rights to beneficial use. By 1929, 424,145 acres of the Imperial Valley were under irrigation. Had the Imperial Irrigation District not subsequently modified its



pre-1914 appropriative rights, the Imperial Irrigation District would have perfected its pre-1914 appropriative water right at over 7 million acre-feet annually. Subsequently, in 1921 representatives from the seven Colorado River basin states, with the authorization of their legislatures and at the urging of the Federal government, began negotiations regarding the distribution of waters from the Colorado River. In November of 1922, the representatives from the upper (Colorado, New Mexico, Utah and Wyoming) and lower (Arizona, California, and Nevada) basin states signed the Colorado River Compact (Compact), an interstate agreement giving each basin perpetual rights to annual apportionments of 7.5 million acre-feet of Colorado River water annually.

The Compact was made effective by provisions in the 1928 Boulder Canyon Project Act (45 Statute 1056), which authorized the construction of Hoover Dam and the All-American Canal and served as the United States' consent to accept the Compact. Officially enacted on June 25, 1929 through a Presidential Proclamation, this act resulted in the ratification of the Compact by six of the basin states and also required California to limit its annual consumptive use to 4.4 million acre-feet of the lower basin's apportionment, plus not less than half of any excess or surplus water unapportioned by the Compact. Arizona refused to sign and subsequently filed a lawsuit. California abided by this federal mandate through the implementation of its 1929 Limitation Act. The Boulder Canyon Project Act moreover authorized the Secretary of the Interior (Secretary) to "contract for the storage of water . . . and for the delivery thereof ... for irrigation and domestic uses", and further defined the lower basin's apportionment split by allocating 0.3 million acre-feet of water to Nevada and 2.8 million acre-feet of water to Arizona. While the three states never formally accepted or agreed to these terms, a 1964 Supreme Court



decision (Arizona vs. California, 373 U.S. 546) declared their consent to be inconsequential since the Boulder Canyon Project Act was authorized by the Secretary.

Following the implementation of the Boulder Canyon Project Act, the Secretary requested California make recommendations regarding the distribution of its allocation of Colorado River water. In August of 1931, under the direction of the Chairmanship of the State Engineer, the California Seven-Party Agreement was developed and authorized by the affected parties in order to prioritize California water rights. The Secretary accepted this recommendation agreement and established these priorities (as shown in Table 3) through General Regulations issued in September of 1931. The first four priority allocations account for California's 4.4 million acre-feet allotment, with agricultural entities utilizing 3.85 million acre-feet of that total. The remaining priorities are defined for years in which the Secretary declares that excess waters are available. Finally, it should also be noted that a 1944 treaty entitles Mexico to an annual apportionment of 1.5 million acre-feet of Colorado River water and additional 200,000 acre-feet in years that excess water is available.

Pursuant to the provisions of the Boulder Canyon Project Act adopted in 1929, the California Limitation Act (Act of March 4, 1929; Chapter 16, 48th Session; Statutes and Amendments to the Codes, 1929, p.38-39.), and the Secretary's contracts, California was apportioned an annual 4.4 million acre-feet out of the lower basin allocation of 7.5 million acre-feet annually, plus 50% of any available surplus water. The further apportionment of California's share of Colorado River water was made by the Secretary of the Interior by entering into contracts with California water right holders. On December 1, 1932 the Secretary, acting on behalf of the United States, executed a contract with Imperial Irrigation District to deliver Colorado River water. See Table 3 for California Colorado River Annual Water Right Priorities.



Table 3⁽¹⁾
California Colorado River Annual Water Right Priorities

Priority Order	User	Apportionment	Present Perfected Rights
1.	Palo Verde Irrigation District (for use exclusively upon 104,500 acres of Valley land in, and adjoining district)	3,850,000 AF	219,790 AF (or the consumption use of 33,604 acres)
2.	Yuma Project (for use on California Division, not exceeding 25,000 acres of land)		38,270 AF (or the consumption use of 6,294 acres)
3a.	Imperial Irrigation District (lands served by All-American Canal in Imperial and Coachella Valleys)		2,600,000 AF (Imperial irrigation District only) (or the consumptive use of 424,145 acres)
3b.	Palo Verde Irrigation District (for use exclusively on an additional 16,000 acres of mesa lands)		
4.	Metropolitan Water District (for use on the Southern California Coastal Plain)	550,000 AF	
	Subtotal: [California's Limit (not including surplus waters) of Colorado River Water as per the Boulder Canyon Project Act and the 1929 Limitation Act]	4,400,000 AF	
5a.	Metropolitan Water District (for use on the Southern California Coastal Plain)	550,000 AF	
5b.	City and County of San Diego (through MWD)	112,000 AF	
6a.	Imperial Irrigation District (lands served by All-American Canal in Imperial and Coachella Valleys)	300,000 AF	
6b.	Palo Verde Irrigation District (for use exclusively on 16,000 acres of mesa lands)		
7.	California Agricultural Use (Colorado River Basin lands in California)	all remaining available water	



The Imperial Irrigation District agreed to limit its California pre-1914 appropriative water rights in quantity and priority to the apportionments and priorities contained in the Seven-Party Agreement. Following execution of the Seven-Party Agreement, the Imperial Irrigation District filed eight California applications between 1933 and 1936 to appropriate water pursuant to the California Water Commission Act. The Imperial Irrigation District filed such applications without waiving its rights as a pre-1914 appropriator, and the applications sought rights to the same quantity of Colorado water as had been originally appropriated—over 7 million acre-feet annually. However, the applications also incorporated the terms of the Seven-Party Agreement, thus incorporating the apportionment and priority parameters of the Seven-Party Agreement into Imperial Irrigation District's appropriative applications. Permits were granted on the applications in 1950.

At the time the Imperial Irrigation District entered into its contract with the Secretary of the Interior, it was anticipated that the lands to be served with Colorado River water in the Coachella Valley to the north would become a part of the Imperial Irrigation District. However, the Coachella farmers eventually decided that they preferred to have their own delivery contract with the Secretary, and an action was brought by the Coachella Valley Water District to protest the Imperial Irrigation District's court validation of the 1932 Imperial Irrigation District water service and repayment contract with the Secretary of the Interior. In 1934, Imperial Irrigation District and Coachella Valley Water District executed a compromise agreement which paved the way for Coachella Valley Water District to have its own contract with the Secretary provided it subordinated its Colorado River entitlement, in perpetuity, to the Imperial Irrigation District entitlement. In other words, within the third, sixth and seventh priority agricultural pool, as set forth in the Seven-Party Agreement and the various California water delivery contracts, Imperial



Irrigation District's water use takes precedence over Coachella Valley Water District's use.

Under the third priority Coachella Valley Water District receives water out of the annual 3.85 million acre-feet agricultural pool after water uses by Palo Verde, Yuma Project, and Imperial Irrigation District are deducted.

Both the Colorado River Compact and the Boulder Canyon Project Act contained provisions that required satisfaction of "present perfected rights", or appropriative rights acquired pursuant to state law that were in existence prior to enacting legislation. Imperial Irrigation District's water rights can be classified as two types, "present perfected" and/or "contract." The 1964 Supreme Court decree (*Arizona vs. California*, 373 U.S. 546), in conjunction with a supplemental 1979 decree (*Arizona vs. California*, 439 U.S. 419, 429), awarded the Imperial Irrigation District a "present perfected right" to 2.6 million acre-feet of Colorado River Water annually. This legal decision reinforced the rights to this water that the Imperial Irrigation District had previously established through appropriations based on historical usage. These present perfected rights are essential to the Imperial Irrigation District as they guarantee priority access to Colorado River water before those without these rights (after Mexico's allotment has been satisfied). Of the Seven-Party Agreement entities, only Palo Verde Irrigation District (PVID), Imperial Irrigation District, and the Yuma Project (non-Indian portions) have present perfected rights. Imperial Irrigation District's remaining water allocations are based on "contract rights" from the December 1932 contract with the Secretary of the Interior (as modified by the 1934 Compromise Agreement with Coachella Valley Water District). Contract rights for all California entities are described in Article 17 of the 1932 Contract and in their individual contracts with the Secretary. While signatories to the 1931 Seven Party Agreement, Los Angeles, San Diego, and the County of San Diego have since merged their rights with those of



the Metropolitan Water District of Southern California, who originally was granted a fourth priority 550,000 acre-feet allotment of California's 4.4 million acre-feet apportionment.

2.3 Water Supply Sources⁽¹⁾

Because the groundwater in the Imperial Unit is of poor quality, other water sources are necessary to adequately supply each agency. Using canals, laterals, dams, and other methods to control their water rights, the Imperial Irrigation District (IDD) retains its water supply from the Colorado River. The City of Calexico is a party to the contract with the Agency.

2.3.1 Groundwater

Groundwater in the Imperial Unit is of poor quality and is unsuitable for domestic or irrigation use. Total dissolved solids (TDS) range from a few hundred to more than 10,000 milligrams per liter (mg/l). Generally, the groundwater's fluoride concentration is higher than that recommended for drinking water, while its boron concentration exceeds that recommended for certain agricultural crops.

2.3.2 Surface Water

Surface water is dependent on the inflow of irrigation water from the Colorado River and is non-potable without treatment. There are three general categories of surface water in the Imperial Unit: freshwater, brackish water and saline water. The freshwater (with TDS generally less than 1,000 ppm) includes all Colorado River inflows delivered by the All American Canal and other canals and laterals within Imperial Irrigation District's Service Area. Brackish water (with TDS in the range of 1,000 to 4,000 ppm) can be found within the Alamo River, New River,



and the agricultural drains that discharge into these rivers or directly to the Salton Sea. The Alamo River derives nearly all of its flow from irrigation water return flows (tail water and tile water) in the Imperial Unit. The New River derives roughly 65 percent of its volume from irrigation water return flows from the Imperial Unit, with the remaining 35 percent is derived from drainage that flows from the Mexicali Valley across the International Border. The application of imported water combined with the presence of fine-textured soils that do not drain well has caused the ground water level to rise in many areas in the Valley, including in the City of Calexico. The high groundwater levels have necessitated that tile drain systems be installed below ground to dewater soils to a depth below the crop root zone. Groundwater in the Valley tends to be saline, and is not generally used for domestic purposes.

The Imperial Irrigation District serves as the regional water supplier, importing raw Colorado River water and delivering it, untreated, to agricultural, municipal, and industrial water users within its service area. Imperial Dam, located 20 miles northeast of Yuma Arizona, serves as Imperial Irrigation District's point of diversion from the Colorado River to the All American Canal.

The Imperial Dam is 147 miles downstream from Parker Dam. It was constructed for diversion of water into the All American Canal and the Gila Gravity Main Canal. The All American Canal diverts water to the Reservation and Valley Divisions of the Yuma Project and to Imperial and Coachella Valleys. The Gila Gravity Main Canal diverts water east of the river to the North and South Gila Valleys, to the Welton-Mohawk Irrigation and Drainage District, and to the Yuma Mesa areas. All the water arriving at Imperial Dam is accounted for. Water passing Imperial Dam through the sluiceways or otherwise released to the river below Imperial Dam is normally scheduled for delivery to Mexico. Imperial Irrigation District staff is



responsible for correct delivery and operational accounting for all water released at Parker Dam and delivered to agency diverters along the Colorado River and at Imperial Dam. Imperial Irrigation District staff operates the Imperial Dam.

The All American Canal is an 82-mile long gravity flow canal that conducts water to the Imperial Valley from the Imperial Dam. The All American Canal delivers water to three main canals, the East Highline, Central Main, and the Westside Main and hundreds of laterals. Through 1,668 miles of canals and laterals, the Imperial Irrigation District delivers water throughout the Imperial Unit. The Imperial Irrigation District has seven regulating and three interceptor reservoirs that have a total storage capacity of approximately 3,400 acre-feet of water. The reservoirs provide increased flexibility and reduce operational losses, but are not designed for long-term storage.

The Imperial Irrigation District delivers water through approximately 5,600 delivery gates for irrigation purposes and operates/maintains about 1,460 miles of drainage ditches used to collect surface runoff and subsurface drainage from the 33,600 miles of private farm tile drains. Surface runoff and flows from the tile drains enter the drainage system and ultimately outlet into the Salton Sea via the Alamo and New Rivers. The conveyance system and the off-farm drainage collection system are operated by Imperial Irrigation District, while the tile drains and tail water discharge systems have been constructed and are operated by landowners.

The City is a party to a contract with the Agency related to Water Supply (See Table 4).



Table 4⁽¹⁾
Current and Projected Annual Water Supplies

Agency	Water Supply Source	2004	2010	2015	2020	2025	2030
Imperial Irrigation District (IID)	Colorado River Water Rights ¹	2,948,500 AF ¹	2,733,800 AF ¹	2,564,800 AF ¹	2,645,300 AF ¹	2,607,800 AF ¹	3,100,000 AF ³
City of Calexico*	IID	3,097 MG	4,750 MG	5,863 MG	7,296 MG	9,401 MG	11,400MG

Units of Measure: AF = Acre Feet MG = Million Gallons

* Includes the 111 Calexico Place Project

1. Imperial Irrigation District's water right is not a defined volume but rather a quantity of water to serve a defined area of land.
2. Water Supply calculated using provisional water use data from Diversions From Mainstream-Available Return Flow & Consumptive Use of Such Water Calendar Year 2000, by U.S. Department of the Interior Bureau of Reclamation Lower Colorado River Operations, March 7, 2001, Provisional Water Use 2000.
3. Voluntary cap as per the proposed Quantification Settlement Agreement (QSA) for the Colorado River.

2.3.3 Water Transfer and Exchange Opportunities

In 1989, the Imperial Irrigation District entered into a water conservation and transfer agreement with Metropolitan Water District of Southern California (MWD). The Imperial Irrigation District/Metropolitan Water District of Southern California Water Conservation Agreement (IID/MWD Water Conservation Agreement) now conserves approximately 108,500 acre-feet of water annually. The conserved water is transferred to MWD and its urban water users in Los Angeles, San Diego, and the surrounding areas in southern California.

In 1997, the Imperial Irrigation District and the San Diego County Water Authority (SDCWA) entered into a long-term conservation and water transfer agreement, which, if implemented, will benefit all Californians. The Imperial Irrigation District/San Diego County Water Authority Water Conservation and Transfer Agreement provides for the transfer to



SDCWA of up to 200,000 acre-feet per year of water conserved within the Imperial Irrigation District service area, plus an additional optional amount of up to 100,000 acre-feet per year.

Under this agreement, the Imperial Irrigation District and its agricultural water users will conserve water and transfer the quantity conserved to SDCWA for at least 45 years. Either agency may extend the contract for another 30 years beyond the initial term. Deliveries in the first year of program implementation will total 20,000 acre-feet and increase in 20,000 acre-feet increments annually for a minimum 130,000 acre-feet transfer or up to a maximum 200,000 acre-feet transfer. SDCWA would pay an amount for the water that equals the cost of conserving the water plus an incentive to encourage participation by farmers, along with an index to adjust the cost of the water in future years based on market prices. Additionally, the water must result from extraordinary conservation, not land fallowing which is contractually prohibited as a method of conservation.

Implementation of the Imperial Irrigation District/San Diego County Water Authority water conservation and transfer is contingent upon several factors, such as the satisfactory completion of 'wheeling' (transportation and/or exchange) arrangements between San Diego County Water Authority and Metropolitan Water District of Southern California, the completion and certification of all required environmental documents, issuance of all necessary permits and approvals by state and federal authorities, environmental mitigation costs that do not exceed predefined caps outlined in the transfer agreement, and adequate farmer participation levels to ensure that at least 130,000 acre-feet of the conserved water is generated by on-farm conservation efforts. The balance of the 200,000 acre-feet can be made up with Imperial Irrigation District system improvements.



In 1999 the Boards of Directors of the Imperial Irrigation District, Coachella Valley Water District, and Metropolitan Water District of Southern California approved the Key Terms for Quantification Settlement among the State of California, Imperial Irrigation District, Coachella Irrigation District, and Metropolitan Water District of Southern California as the basis for obtaining public input regarding a Quantification Settlement Agreement (QSA). From this input and negotiations the QSA parties drafted a series of legal agreements that together will comprise a QSA. In general, the QSA is a proposed agreement to reallocate a portion of Colorado River water and implement certain practices during the quantification period (which could last from 35 to 75 years) as a means of resolving differences among Colorado River contractors regarding water allocations. The QSA is designed to enhance the reliability of Colorado River supplies to each of the participating agencies and provide part of the mechanism for California to limit its diversions of Colorado River water to its 4.4 million acre-feet per year apportionment. The QSA includes provisions that would:

1. Voluntarily limit the share of Colorado River water that may be diverted and put to beneficial use by Coachella Valley Water District and Imperial Irrigation District.
2. Facilitate various conservation and transfer agreements.
3. Modify existing conservation agreements to fit within the terms of the QSA.
4. Establish other conditions that must be in place before the approval of the QSA.

The quantification of agency specific diversion rights and implementation of voluntary conservation measures and water transfers/exchanges by participating agencies would result in the annual, collective transfer of water from agricultural uses, principally in the Imperial Irrigation District service area, to other participating agencies. Water conservation would be



achieved through a variety of means, including on-farm and system improvement measures within the Imperial Irrigation District service area and main canal linings.

Under the QSA, Imperial Irrigation District would agree to limit its Priority 3a diversion of Colorado River water to 3.1 million acre-feet per year. This consensual limitation constitutes a forbearance of Imperial Irrigation District's right to divert, for beneficial use, up to the entire balance (after Priorities 1 and 2) of the 3.85 million acre-feet per year amount allocated in the aggregate to Priorities 1, 2, and 3. This forbearance increases the certainty of water availability to agencies with lower priorities. Water conserved within Imperial Irrigation District's service area would be available for use by Coachella Valley Water District, Metropolitan Water District of Southern California, or San Diego County Water Authority. Portions of the Imperial Irrigation District/Metropolitan Water District of Southern California and Imperial Irrigation District/San Diego County Water Authority water conservation and transfer agreements would be modified to reflect changes in diversion point and recipient of some of the conserved water, but the cumulative total volumes of the transfers would not be affected.

2.4 Project Water Service Area⁽²⁾

The Project Water Service Area under consideration is in the incorporated area of the City of Calexico.

2.5 Climatic, Topographic and Geographic Data⁽¹⁾⁽²⁾

The City is located in Imperial County. Imperial County is located in the southeast corner of California. It is bordered on the west by San Diego County, on the north by Riverside County, on the east by the Colorado River which forms the California/Arizona Boundary, and on



the south by 84 miles of the International Boundary of Mexico. Imperial County encompasses an area of 4,597 Square miles or 2,942,080 acres. Imperial County is considered an arid desert, characterized by hot, dry summers and mild winters. Summer temperatures rarely drop below 32 degrees Fahrenheit. The remainder of the year has a relatively mild climate with temperatures averaging in the mid-70s. The average annual air temperature is 72 degrees Fahrenheit and the average frost-free season is about 300 days per year.

Annual rainfall in the Imperial Valley averages less than three inches, with most rainfall associated with brief but intense storms. The majority of the rainfall occurs from November through March. Periodic summer thunderstorms are common in the region.

Imperial Valley elevations range from sea level to 273 feet below sea level. The Mexican Border is located at the southern end of Imperial Valley and the elevation is sea level. The southern end of the Salton Sea is located at the northern end of Imperial Valley and the elevation is 273 feet below sea level. The relatively flat topography of the Imperial Valley and surrounding areas in conjunction with strong night and day temperature differentials, particularly in the summer months, produce moderate winds and deep thermal circulation systems. The thermal systems facilitate general dispersion of the air.

Approximately fifty percent of lands in Imperial county is undeveloped and under federal ownership and jurisdiction. One-fifth of the nearly 3 million acres in Imperial County are irrigated for agricultural purposes, most notably the central area known as Imperial Valley. The Imperial Valley irrigated agriculture consists of 512,163 acres. The developed area, where Imperial County's incorporated cities, unincorporated communities, and supporting facilities are situated, comprises less than one percent of the land. Approximately seven percent of Imperial County is within the boundaries of the Salton Sea.



The Imperial Valley is located in Imperial County. The Imperial Valley area is in the south-central part of Imperial County, and is bounded by Mexico on the south, the Algodones Sand Hills on the east, the Salton Sea on the north, San Diego County on the northwest, and the alluvial fans bordering the Coyote Mountain and the Yuma Desert on the southwest. The Imperial Valley Area encompasses 989,450 acres (U.S. Department of Agriculture Soil Conservation Service, 1981, p.1).

2.6 Population Data⁽²⁾

Since the leading industry in Imperial County is agriculture, population is closely related to job and employment availability. The City's population increases more during winter months than during summer months due to the seasonal trends of the agricultural production. The City of Calexico Service Area Plan indicates that the population projection for the years 2005 to 2030 would range from 32,600 to 99,500 respectively (See Table 5).

Table 5 Population Projections for the City of Calexico						
Population Projections	2005	2010	2015	2020	2025	2030
Calexico ⁽²⁾	32,600	41,100	53,300	69,000	89,500	99,500
111 Calexico Place Project	0	1,856	6,496	9,280	9,280	9,280

⁽²⁾ Service Area Plan (includes the 111 Calexico Place Project).

2.6.1 Project and Regional Growth Forecast⁽²⁾

The proposed project is located in the City of Calexico. The project site will generate a total of approximately 9,280 people at 40 people per acre.



2.7 Land Use ⁽¹⁾⁽²⁾

The Imperial Unit is predominantly an agricultural area. Agricultural development in the Imperial Valley began at the turn of the twentieth century and now includes approximately 500,000 acres of irrigated land that support a \$1 billion annual local agricultural economy.

Imperial Irrigation District is the regional water supplier in Imperial County, delivering Colorado River flows to all agricultural lands and urban water retailers within its contracted water service area. The Imperial Irrigation District operates open channel gravity flow irrigation and drainage systems and continually strives to develop innovative ways to improve its operations, increase reliability, and to conserve water.

While the agriculture-based economy is expected to continue, land use will vary somewhat over the years as urbanization and growth occurs in the rural areas adjacent to existing urban areas. The developed areas within the Imperial Unit include incorporated cities, unincorporated communities, and supporting facilities. The City of Calexico is one of the seven incorporated cities in the Imperial Unit.

The City of Calexico is located at the southern terminus of State Route 86 along the U.S./Mexico International Border. The City of Calexico covers approximately 4.5 square miles or 2,889 acres (Calexico's planning area covers 14 square miles or 8,960 acres). Land use within Calexico's incorporated boundaries include: housing, commercial, and industrial uses, and agricultural open space. Much of Calexico's recent growth can be attributed to the presence of the maquiladora manufacturing plants across the U.S./Mexico International Border in Mexicali, Mexico. The maquiladoras provide labor-intensive manufacturing services for the U.S. based industries and are becoming more attractive to U.S. businesses that are trying to remain competitive in the current economic climate.



The City of Calexico Urban Area is approximately 6,980 acres and surrounds the incorporated City of Calexico. The Calexico Urban Area is generally bounded on the west by Dogwood Road; on the north by Willoughby Road and Jasper Road; on the east by Bowker Road; and on the south by the City of Mexicali, Mexico.

2.7.1 Future Land Use

Undeveloped areas that are being developed or could possibly be developed include areas that surround the incorporated cities and areas that surround the unincorporated communities of Imperial County.

2.8 Utilities⁽²⁾

The proposed project requires the construction, expansion, and improvements of water lines and treatment facilities, and wastewater facilities. The developer of the Project is required to pay development fees to cover the construction expansion, and improvements in order to meet the requirements of SB 610 and SB 221.

2.9 Water^{(1) (2)}

The Project is located within the City of Calexico. The current Service Area Plan had factored the land uses contained therein and developed a long-range plan to periodically expand water treatment and transmission capacity. These improvements are to be financed, as necessary, by developers as allowed by Calexico Ordinance 908 § 1. The City, therefore, will require the payment of impact fees to help cover the costs associated with expanding the water facilities as necessary.



The water treatment plant currently can serve all areas within the City. The City recently purchased 10 acres of land near State Route 98 and Cole Road and plans a 6 million gallon water storage tank on the site to help serve all of the new development occurring in the eastern area of the City.

The Imperial Irrigation District (IID) sells to the Calexico Water Department all of its raw water. The IID water is delivered to the City of Calexico (as well as the entire Imperial Valley) via an open canal system from the Colorado River. Currently, 2% of imported IID water is divided among nine Imperial Valley cities, including Calexico.

Therefore, since the Project is within the City, the developer of the Project will be constructing the necessary water line internally, will be required to pay development fees to cover the cumulative expansion of the water plant, and have to comply with SB 221 and SB 610 as a condition of approval.

As mentioned above, the requirement of these said Bills require that proof of long-term water supply be proved by the water purveyor; in the case of this Project, Imperial Irrigation District (IID) and the City. SB 610 requires this WSA, and SB 221 requires the water supplier to prove the availability of water to serve the project (along with its other commitments to serve) over a 20-year projection. Since this is a condition of project approval, should the supplier be unable to supply long-term water to the project, the project will not be approved.

2.9.1 Potable Water^{(1) (2)}

Potable water will be supplied to the Project by the Calexico Water Department.



2.9.2 Performance Standards^{(1) (2)}

There are design criteria that must be met to ensure that adequate potable water supply and fire flow needs are provided. The design criteria are based on three scenarios, Peak Hour Demand (PHD), Maximum Day Demand (MDD) plus fire flow, and Tank Refill, with the most stringent of the scenarios governing the design. The design criteria include the following:

- 200 gal/person/day average day consumption.
- Flow Velocity shall be limited to 20 feet per second.
- 20 psi shall be maintained system-wise during all conditions
- Maximum Day Demand (MDD) is 1.5 times Average Day Demand (ADD)
- Peak Hour Demand (PHD) is 1.8 times MDD
- Storage required is based on Maximum Day Demand plus a 2,500 Gallons Per Minute (GMP) fire flow for a four-hour duration.
- Treatment plant capacity shall meet the demands of the Maximum Daily Flow (MDF)
- Fire Flow Minimums –
 - 1,500 GPM Residential
 - Two 1,000 GPM Residential
 - 2,500 GPM commercial

2.9.3 Facility Planning and Adequacy Analysis^{(1) (2)}

Raw water comes from the Colorado River and is distributed by the Imperial Irrigation District (IID) via the All American Canal near the Southern Pacific Railroad. Raw water is pumped through a 42" pipeline to the City's 25 million gallon reservoir.

The City's raw water pumps (3 total) transfer the raw water from the canal to the City's 25 MG raw water reservoir. The water is then pumped from the raw water reservoir through a



30" pipeline to the City's water treatment plant, located at 545 Pierce Avenue, a distance of approximately one mile from the diversion point.

The existing 12 MGD surface water treatment plant is a conventional type plant consisting of two (2) upflow clarifiers, gravity filtration, and chlorine disinfection. This water is treated in compliance with the Surface Water Filtration and Disinfection Treatment Regulations (Chapter 17 Title 22, California Code of Regulations), the California Department of Health Services, and Local Agency requirements. The level of treatment and compliance with safe drinking water requirements varies with the quality of the raw water delivered.

2.9.4 Inventory of Existing Facilities^{(1) (2)}

Water Treatment Plant

The City's Water Treatment Plant (WTP) currently has a capacity of 12 MGD, which is currently capable of providing adequate service for the entire City.

The following is a summary of the present capacity of the individual plant components.

Item	Existing Capacity
Raw water transfer pump station (Canal to Reservoir)	15 MGD
Raw water reservoir	25 MG
Raw Water transfer pump station (Reservoir to WTP)	15 MGD
Existing 30" diameter raw water line	20 MGD
Clarifier (2)	20 MGD
Filtering system	12 MGD
Finished water pump station	24 MGD

Storage

The City's raw water supply is stored in a single 25 MG open water reservoir. The treated water is stored in three (3) above grade, fabricated steel, tanks located at the treatment



plant site. They have the following capacities of 1.0 MG, 3.0 MG, and 4.0 MG for a total of 8.0 MG available storage for distribution.

The City's total capacity is 33 MG or approximately five (5) days of storage at the current average daily flow (ADF).

Pump Station

The City has one (1) treated water pump station at the WTP, which currently maintains water pressure for the City. The current peak flowrate of the treated water pump station is 17,500 GPM or 24 MGD. The discharge pressure of the pump station is approximately 55 psi.

There are eight (8) pumps available to transfer potable water from the storage tanks to the City's distribution system. The individual pump capacities are as follows.

1-600 gpm – (electric, constant speed)

3-1200 gpm – (electric, constant speed)

2-2500 gpm – (natural gas, constant speed)

2-4000 gpm – (electric, variable frequency drive)

The present water system is operated in one pressure zone which is sustained by pumping only. Because the topography is essentially flat throughout the City, there are no reservoirs in the system that can provide a hydraulic gradient to sustain even the minimum pressures required by users. Hence, the system is considered a closed system.

Water Pipelines

The existing water distribution system includes over 75 miles of pipelines ranging from 2" to 30" diameter



2.9.5 Adequacy of Existing Facilities^{(1) (2)}

Water demand data available for estimating flow rates in the water distribution system consists of total flow from the treatment plant. Based on the 1999 Service Area Plan prepared by Canty Engineering Group, Inc., for the year 1998 the Average Day Demand, Maximum Day Demand, and Peak Hour Demand were 5.6 MGD, 8.4 MGD, and 10,481 GPM, respectively. The current demands for the water system are as shown in Table 6-A

Table 6-A – Existing Water Demands⁽²⁾

YEAR	ADD	MDD	PHD
1998	5.6 MGD	8.4 MGD	10,481 GPM (15.1 MGD)
2005 (current)	6.7 MGD	10.0 MGD	12,960 GPM (18.0 MGD)

The existing raw water transfer pumps, which deliver water from the canal to the storage reservoir, have a total capacity of 15 MGD and the pumps delivering raw water from the storage reservoir to the WTP have a total capacity of 15 MGD.

The MDD of 10.0 MGD can be processed through the existing water treatment plant, which has a total capacity of 12 MGD. The peak hour demand of 12,960 GPM can be delivered to the system by the existing treated water pump station, which has a total capacity of 17,200 GPM.

2.9.6 Future Demand for Facilities^{(1) (2)}

The projected population growth utilized to predict future demands and the needs of new facilities was based on the 2005 General Plan Update prepared by Albert A. Webb Associates. The projected population growth and water demands are shown in Table 6-B. The City has



established the following long-term water supply goals relating to storage, treatment and pumping facilities.

1. The City will always maintain at least five (5) days worth of total storage at Average Day Demand. In addition, over the next 20 years the City will work towards having seven (7) days of total storage available at all times.
2. The City will have the ability to meet Maximum Day Demand at 80% of its treatment plant capacity.
3. The City will have the ability to meet Peak Hour Flow rates at 75% of its pumping capacity.

Tables 6-B, 6-C, and 6-D show the implementation schedule necessary to meet these goals based upon the current population projections.

Table 6-B – Water Demands and Total Storage⁽²⁾

Year	Projected Population	ADD (MGD)	MDD (MGD)	Raw Water Storage (MG)	Finished Water Storage (MG)	Total Storage (MG)	Holding Capacity
2005	32,600	6.7	10.0	25	8	33	4.93
2010	41,100	8.2	12.3	25	14	39	4.76
2015	53,300	10.6	15.9	50	28	78	7.36
2020	69,000	13.8	20.7	70	33	103	7.46
2025	89,500	17.9	26.8	90	38	125	6.98
2030	99,500	19.9	29.9	90	38	125	6.28

Table 6-C – Water Demands and Treatment Capacity⁽²⁾

Year	Projected Population	ADD (MGD)	MDD (MGD)	Total Treatment Capacity (MGD)
2005	32,600	6.7	10.0	12.0
2010	41,100	8.2	12.3	16.0
2015	53,300	10.6	15.9	20.0
2020	69,000	13.8	20.7	26.0
2025	89,500	17.9	26.8	32.0
2030	99,500	19.9	29.9	32.0



Table 6-D – Water Demands and Finished Water Pumping⁽²⁾

Year	Projected Population	ADD (MGD)	MDD (MGD)	Peak Hour Flow Demand (GPM)	Total Finished Water Pumping Capacity (GPM)
2005	32,600	6.7	10.0	12,960	17,200
2010	41,100	8.2	12.3	15,940	26,200
2015	53,300	10.6	15.9	20,600	26,200
2020	69,000	13.8	20.7	26,800	35,200
2025	89,500	17.9	26.8	34,800	46,500
2030	99,500	19.9	29.9	38,700	51,400

2.10 Project Water

The 111 Calexico Place is a nearly 232-acre project located in the northwest portion of the City of Calexico. The proposed land use of the site is Commercial highway.

2.10.1 111 Calexico Place Project Site Specific Study⁽⁶⁾

Water is proposed to be supplied to the project by connections to the future 24" main to the north in Jasper Road and in Sunset Blvd.. Applicable water design criteria are based on the Service Area Plan and are as follows:

- Average day demand for commercial highway consumption = 1,500 gpd/acre
- Commercial Fire Flow = 2,500 gpm
- A factor of 1.5 is applied to the average day demand (ADD) to calculate maximum daily demand (MDD)
- A factor of 1.8 is applied to the MDD to calculate peak hour demand.

2.10.2 Water Demand

The water demand estimate for 111 Calexico Place Project is shown in the following table.

Use	Rate (gpd/Ac.)	Net Area (Ac)	ADD (gpd)	MDD (gpd)	Peak Hour Demand (gpm)
Commercial Highway	1,500	232	348,000	522,000	638



The Water Treatment Plant (WTP) has adequate capacity to serve the Project based on a ADD of 348,000 gpd since the WTP is scheduled to be expanded within the next five years to increase the capacity from 12 to 16 MGD. It is concluded that the WTP is adequate to serve the 111 Calexico Place Project.

The 111 Calexico Place Project at build-out would require an ADD of approximately 348,000 gpd, a MDD of 522,000 gpd, and a peak hour demand of approximately 638 gpm.

2.10.3 Water Construction Phasing ⁽⁶⁾

The 111 Calexico Place Project will be constructed and opened prior to construction of the 24" water main in Jasper Blvd and Sunset Blvd. Since the schedule of the Calexico Mega Park Project & 111 Calexico Place Project are concurrent, for the interim condition, a water loop may be obtained by making a connection into the water main in the northern portion of the Calexico Mega Park Project site, as shown on Figure 7 – Water & Sewer Exhibit ⁽⁶⁾. The Sewer Exhibit is a Composite Utility Plan which includes the water system. The loop will run throughout the site and be maintained and operated prior to the installation of the future 24" in Jasper Blvd.

Once the future 24" truck line is installed in Jasper Blvd, the interim loop connection would be connected to the 24" line. Due to the additional connection points, it is expected that it would benefit water pressures that would be available for the 24" line in Jasper Blvd in the ultimate condition.

In any case, the developer of the Project will have conditions placed on the Project to connect the interim system to the Master Plan system when it becomes available. Furthermore,



the developer of the Project will be required to accept all of the conditions placed by the City on the Tentative Tract Map to be granted the rights to construct the interim system.

2.10.4 Water Availability

The annual use of water in the United States for Agricultural land is 2.84 Ac.ft per acre⁽⁵⁾. In California it is 3.37 Ac.ft per acre.

The project site consists of 232 Ac which converts to 255 MG/year of water usage for irrigation. The water use for the 111 Calexico Place Project, based on the General Plan parameters of 40 people/acre at 50 gallons/day, would be 170 MG/year. Based on the “City of Calexico 111 Calexico Place Sub-Area Utilities Study,”⁽⁷⁾ the water use is 146 MG/yr.

On a conservative basis using 2000 gallons per acre for Commercial Highway use, 25 gallons/day for hotel rooms and 25 gallons per day for 1000 occupants for the casino, the water use would be 195 MG/year.

In any case the water use would be less than the use for irrigation.





2.11 Wastewater

Wastewater service will also be provided by the City of Callexico. All wastewater flows to an activated sludge treatment plant located north of the Callexico International Airport and south of the New River. Currently, the maximum daily capacity of the treatment plant is 4.3 mgd and it operates at about 70% capacity. According to the current Service Area Plan, by 2007, growth is expected to cause demand to reach capacity. Construction in the future is expected to increase capacity of the treatment plant to 6.45 mgd. Ultimate buildout for the sewage treatment facility is 14.51 mgd.

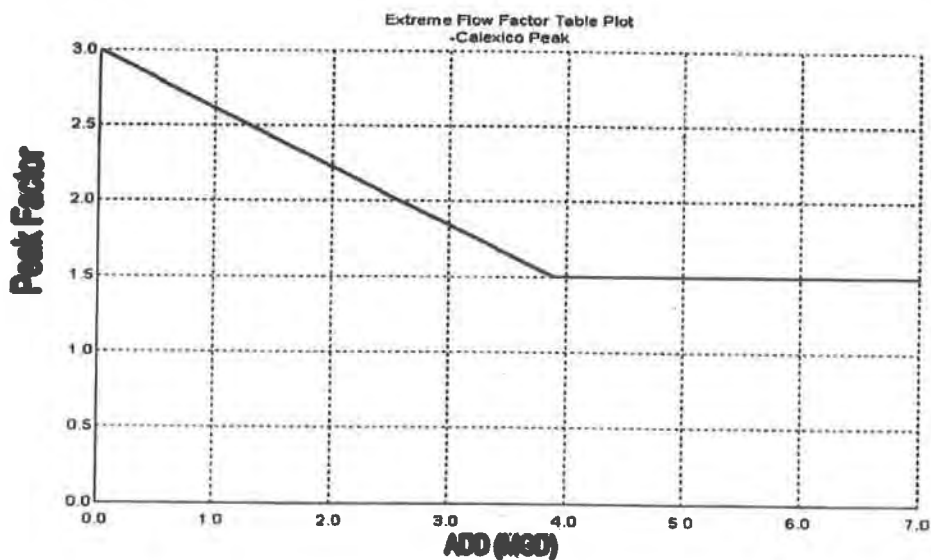
2.11.1 Performance Standards⁽²⁾

To ensure adequate wastewater treatment and conveyance the City has established the following design criteria for determining sewer pipeline capacity:

- Average Daily Flow (ADF) = 85 gpd/capita
- Infiltration and Inflow (I/I) = 10% of ADF
- Manning's roughness coefficient "n" = 0.012
- Flow velocities shall be no greater than 20 feet per second (fps)
- Flow velocities shall be no less than 2 fps
- Depth to Diameter Ratio (d/D) as follows:

<u>Pipe Diameter</u>	<u>Design Criteria</u>
6" to 12" diameter	d/D = 0.50
15" to 18" diameter	d/D = 0.75
21" and greater	d/D = 0.93

- Peaking Factors are shown on the following graph:



Peak Factor Graph

2.11.2 Facility Planning and Adequacy Analysis⁽²⁾

Over the last few years, the average daily flow to the City's Wastewater Treatment Plant (WWTP) has varied. Currently the average daily flow is approximately 2.7 million gallons per day (MGD).

The existing City WWTP is located in the southwest part of the City. The WWTP is bounded by the Calexico International Airport to the south and the New River to the north. Treated effluent is discharge to the New River.

A. Inventory of Existing Facilities

Wastewater Treatment Plant

The existing activated sludge WWTP has an average daily flow (ADF) capacity of 4.3 MGD and a peak daily flow capacity of 5.5 MGD. The process flow scheme consist of a headwork structure, primary clarifier, aeration tanks, secondary clarifiers, and sludge drying beds.



Wastewater Collection System

The City currently operates a wastewater collection system of pipelines, ranging from 6 to 30 inches in diameter. Lateral and trunk sewer lines discharge into one of two interceptor sewers. The South Interceptor Sewer primary serves east of the Southern Pacific Railroad and south of Highway 98. Wastewater flows from the north and west portions of the City discharge into the North Interceptor Sewer.

Because of the relative flatness of the area, most sewer lines have been constructed at minimum slopes and the interceptors are relatively deep, some as much as 20-feet. Also due to the flat topography, many small sewage lift-stations have been constructed throughout the City to provide service to new developments.

B. Adequacy of Existing Facilities

Wastewater Treatment Plant

As stated previously, the existing WWTP has an ADF capacity of 4.3 MGD and a PDF capacity of 5.5 MGD. During the fall of 2004 and early spring of 2005, the City experienced much higher than normal precipitation. On one occasion the daily flowrate reached 5.0 MG. This was the highest daily flow ever recorded at the City's WWTP. The excess flow was able to be contained in the on-site aeration basin but a majority of the available freeboard was utilized in the process of storing the peak flow.

The excessive flow during inclement weather is a sign of infiltration/inflow problems within the collection system. Infiltration/ inflow problems can be reduced by the construction of proper storm drain conveyance systems, and the replacement or lining of damaged wastewater pipe reaches and manholes. For an interim solution to accommodate excessive flows at the WWTP due to infiltration/inflow, the City should construct an additional equalization basin at



the WWTP. When the plant's treatment capacity is exceeded, flow could be diverted to the equalization basin for temporary storage and treatment during off peak hours. It is anticipated that this basin should be sized to contain 3 MG which would cost the City approximately \$300,000. It should be noted that the City receives an average of 2-3 inches of rain per year and therefore peak days due to excessive rainfall are very rare.

Wastewater Collection System

A hydraulic analysis of the City's existing and future sewer collection system within the Sphere of Influence was performed. The hydraulic capacity of the existing system was evaluated under average daily flow and peak weather flow (PWWF) conditions.

The results indicated that the existing system provides adequate capacity at ADF conditions, but during PWWF conditions the 12" pipeline on Ollie Avenue between Hacienda Dr. and West Canal Street, and the 15" pipeline on Fifth Street between State Highway 111 and the downstream 18" pipeline are flowing full.

C. Future Flows for Facilities

Based on the projected population growth provided in the proposed General Plan Update prepared by Albert A. Webb Associates the average daily flow was determined by using 85 gal per day per capita, 1,600 gal per day per acre (GPD/AC) for commercial, 800 GPD/AC for industrial, 800 GPD/AC for public open space, and infiltration and inflow is 10% of the average daily. Average annual projected wastewater flow demand is shown in Table 7.

D. Wastewater Construction Phasing⁽⁶⁾

The 111 Calexico Place Project will be constructed and opened prior to the Construction of the 30" sewer main in Jasper Blvd. Since the construction schedule of the Calexico Mega Park and 111 Calexico Place projects are concurrent, for the interim condition combining a force



main connection to the force main of the Calexico Mega Park⁽⁶⁾ may be feasible or an independent force main may be installed for the 111 Calexico Place Project. The temporary outfall for the force main is an existing manhole located south of the Central Main Canal in Rockwood Road. The 111 Calexico Place Project should have a lift station located near Jasper Blvd to gravity flow into the future 30" main. Another option would be to flow southerly in Sunset Blvd and connect to the proposed 8" SS main to be installed in Robinson Ave.

In any case the developer of the Project will have conditions placed on the Project to connect the interim system to the Master Plan system when it becomes available. Furthermore, the developer of the Project will be required to accept all of the conditions placed by the City on the Tentative Tract Map to be granted the rights to construct the interim system.

Table 7 – Projected Population, Wastewater Flows, and Treatment Capacity ⁽²⁾

Year	Projected Population	ADD (MGD)	PWWF (MGD)	ADF Treatment Capacity (MGD)	PWWF Treatment Capacity (MGD)
2005	32,600	2.7	5.0	4.3	5.5
2010	41,100	3.8	6.5	8.5	17.0
2015	53,300	5.0	8.0	8.5	17.0
2020	69,000	6.7	10.7	8.5	17.0
2025	89,500	8.7	13.9	12.5	25.0
2030	99,500	9.6	14.3	15.0	28.0

2.12 Hydrology and Water Quality⁽¹⁾

The following discussion is on hydrology and water quality standards and general water quality degradation.

2.12.1 Environmental Setting⁽¹⁾

The climate of the Imperial Valley is arid, with hot summers and mild winters. Average annual precipitation is 2.8 inches. The wettest year on record was 1939 when 8.5 inches of rain



was received. Temperatures exceed 100 degrees for more than 110 days out of the year, and there are more than 300 frost free days per year. While summers are intensely hot, the climate for the rest of the year is generally mild and enjoyable.

2.12.2 Surface and Groundwater Quality⁽¹⁾

The Imperial Valley contains as much as 3 billion acre-feet of groundwater, according to the Imperial Valley General Plan EIR certified in 1993. As mentioned previously, the application of imported water combined with the presence of fine-textured soils that do not drain well has caused the ground water level to rise in many areas of the Valley, including in the City of Calexico. The high groundwater levels have necessitated that tile drain systems be installed below ground to dewater soils to a depth below the crop root zone. Ground water in the Valley tends to be saline, and is not generally used for domestic purposes.

Water quality for all surface and ground waters for the entire Imperial Valley and Calexico is regulated under the jurisdiction of the Colorado River Basin Regional Water Quality Control Board (CRB-RWQCB), Region 7. Water quality standards for all waters in the Region are discussed in the Region's Basin Plan. The Colorado River Basin RWQCB has separated their jurisdictional area into six different planning areas. The proposed 111 Calexico Place project area lies within the Imperial County Planning Area which covers 2,500 square miles.

2.12.3 Hydrology⁽¹⁾

All watersheds within the Imperial Valley drain into the Salton Sea, a closed water body located at an elevation of about 270 feet below sea level (See Figure 5). The Valley is within the Salton trough, a depression that has a high point of 47 feet above sea level on the Colorado River



Delta in Mexico, and its lowest point at 275 feet below sea level near the Riverside County Line. The lowest elevational area is the bed of the ancient Lake Cahuilla that existed about 600 years ago when the Colorado River probably flowed into the inland area; evidence of its shoreline can still be observed on the mountains adjacent to the Salton Sea at an elevation of 35 feet above sea level. Mesas are present to the east and west of the old lakebed; these are terraces of the Colorado River delta. The main sources of inflows into the Salton Sea are from the New and Alamo Rivers that flow north from the Colorado River delta through the irrigated agricultural fields of the Valley and into the Salton Sea. Drainages within alluvial fans of the Chocolate Mountains, and intermittent streams associated with mountains to the west, all ultimately flow into the Salton Sea. The total watershed area draining into the Salton Sea covers 8,360 square miles.

Since 1942, water diversions from the Colorado River have occurred via the All American Canal, at the Imperial Dam. This canal is 82 miles long, owned by the Bureau of Reclamation and flows are managed by the Imperial Irrigation District (IID); IID diverts water into three main canals: the East Highline, Central Main, and Westside Main, that have a combined length of 230 miles; and, in turn, these canals deliver water to other local canals, with a combined length of 1,438 miles from which farmers can divert water for their irrigation purposes. Ninety-eight percent of the IID transported water is used for agriculture; about 2% is delivered to nine Imperial Valley cities that then treat the water and sell it to their residents and businesses. Over 3 million acre feet of water flowed into the IID system in 2002. The total production of the Colorado River is about 14 million acre feet of water per year. California's basic apportionment is 4.4 million acre feet per year (Colorado River Basin RWQCB Basin



Plan). One acre-foot is equal to 325,900 gallons, considered to be enough to provide the water requirements for a family of five for one year.

Stormwater drainage within the Imperial Valley is handled by approximately 1,450 miles of IID canals that drain into the Salton Sea. These canals were designed only to handle return flows from agricultural activities and are thus incapable of properly discharging urban storm water runoff. For this reason, IID restricts the amount of storm water runoff discharged by urban development in order to prevent downstream flooding. Typically, on-site retention of storm water in earthen basins is the preferred method used in urban development in the City of Calexico. The current Service Area Plan recommends the use of site-specific retention basins that outflow into All American Drain No.8, 8A, and 8-A No. 1.

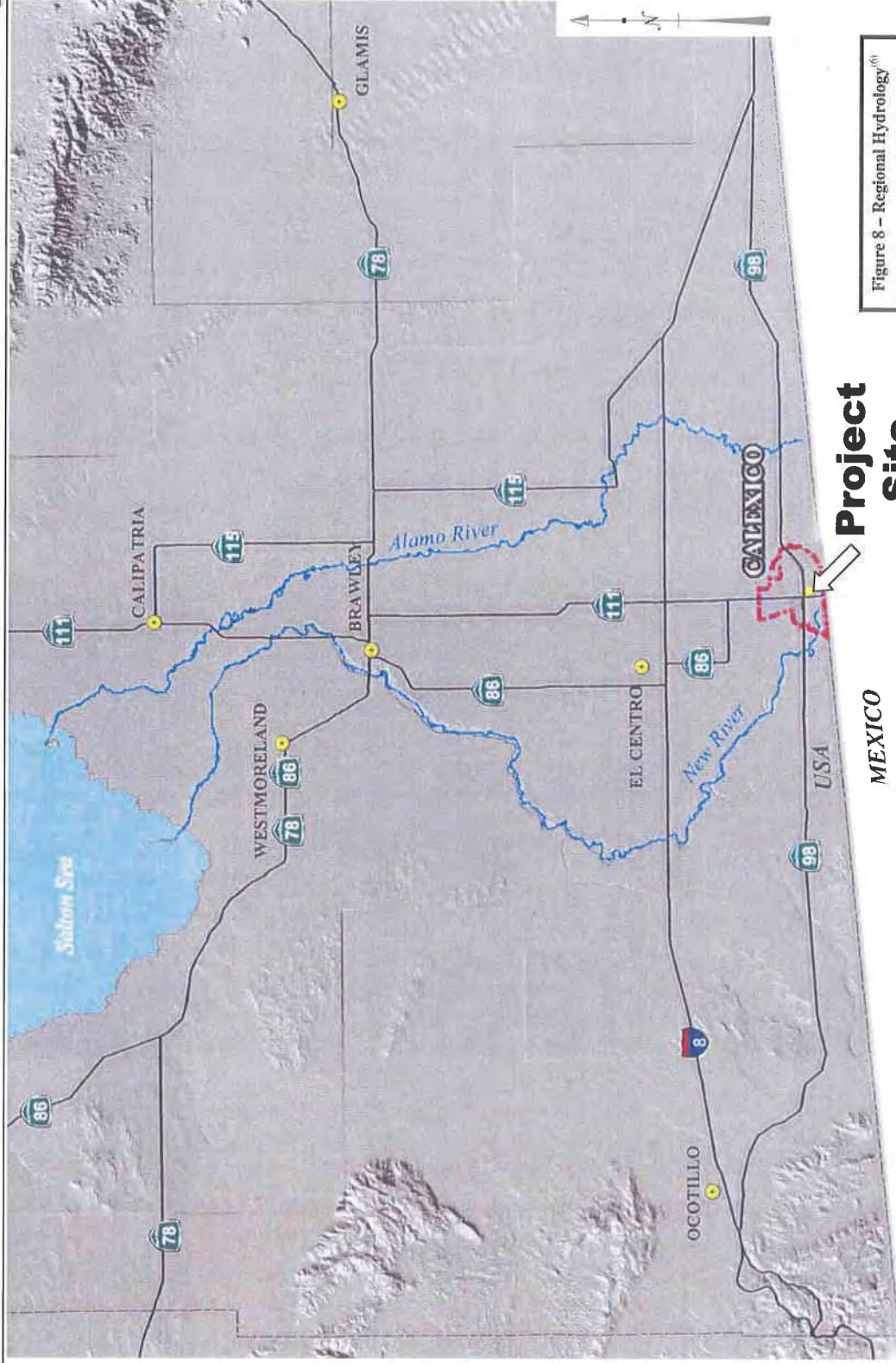


Figure 8 – Regional Hydrology⁽⁶⁾



2.13 Water Use⁽¹⁾

The Imperial Irrigation District provides wholesale water service. Demand for water in the Imperial Unit service area is divided into three basic categories: agricultural, municipal, and industrial. Historically the Imperial Irrigation District has delivered 98.2 percent of its annual flows to agricultural water users, 1.2 percent to municipalities, and 0.6 percent for industrial purposes.

The City of Calexico diverts water from Imperial Irrigation District's canal system to their treatment facilities prior to distribution to individual water users within their municipalities. The Imperial Irrigation District is not a public water system and does not supply potable drinking water. The Imperial Irrigation District does provide raw untreated canal water to small acreage and service pipe connections, some of which are rural homes without any alternative water source. In these instances, the Imperial Irrigation District has complied with state and federal Safe Drinking Water Acts (SDWA) through an exclusionary process unique to irrigation districts.

The Imperial Irrigation District ensures that all rural water users (with indoor uses of canal water) also have a source of water delivered to their property for cooking and drinking purposes.

Raw water use by the Imperial Irrigation District is shown in Table 8. The Imperial Irrigation District's consumptive use values, listed in Table 8, include the total use of raw water in the Imperial Unit. These consumptive use values include agriculture, small acreage, service pipes, municipalities, industrial, losses and unaccounted for raw water. There is no available data that completely distinguishes between these uses of raw water.



Table 8⁽¹⁾ Imperial Irrigation District Annual Water Use (Historical, Projected, and Water Conservation and Transfer Programs/Projects)						
Water Use*	2005	2010	2015	2020	2025	2030
Consumption Use ^{1,2,&3} (includes agricultural, service pipes, municipalities, industrial, losses, and unaccounted for)	2,910,000 ³	2,722,300 ³	2,677,300 ³	2,652,300 ³	2,627,300 ³	2,627,500 ³
Water conservation & Transfers						
IID/MWD Transfer ^{4&5}	110,000 ⁵	110,000 ⁵	110,000 ⁵	110,000 ⁵	110,000	110,000
IID/San Diego County Water Authority Transfer ⁶	80,000	180,000	200,000	200,000	200,000	200,000
IID/Coachella Valley Water District Transfer ⁷	0	20,000	45,000	70,000	70,000	70,000
AAC Lining Conservation (MWD) ⁸	0	56,200	56,200	56,200	56,200	56,200
AAC Lining Conservation (San Luis Rey Indian Water Rights Settlement Act) ⁸	0	11,500	11,500	11,500	11,500	11,500
Total (Acre -Feet)	3,100,000	3,100,000	3,100,000	3,100,000	3,100,000	3,100,000
Units of Measure:	Acre-Feet					

¹ Decree accounting consumptive use data from *Compilation of Records in Accordance with Article V. of the Decree of the Supreme Court of the United States in Arizona v. California Dated March, 9. 1964 for Calendar Years 1990 and 1995*, by the U.S. Department of the Interior Bureau of Reclamation Lower Colorado River Region, pp. 14-17.

* Estimated using provisional water use data from *Diversions from Mainstream-Available Return Flow & Consumptive use of Such Water Calendar Year 2000*, by U.S. Department of the Interior Bureau of Reclamation Lower Colorado River Operations, March 7, 2001, Provisional Water Use 2000.

³ Voluntary cap as per the proposed Quantification Settlement Agreement (QSA) for the Colorado River, value closes "Total" to 3,100,000 acre-feet.

⁴ Imperial Irrigation District All American Canal (38 Years), p. 1.

⁵ *Key Terms for Quantification Settlement among the State of California, UD, CVWD, and MWD*, October 15, 1999 p. 4.

⁶ *Agreement for Transfer of Conserved Water by and between Imperial Irrigation District, a California irrigation district ("IID"), and San Diego County Water Authority, a California county water authority ("Authority")*, 1998, Article 3 Quantity, p. 13. At full implementation -project savings are between 130,000 and 200,000 acre-feet.

⁷ *Key Terms for Quantification Settlement among the State of California, IID, CVWD, and MWD*, October 15, 1999, pp. 6 & 8.

⁸ *Key Terms for Quantification Settlement among the State of California, TID, CVWD, and MWD*, October 15, 1999, pp. 10 & 11.

* Includes 111 Calexico Place Project.



Water distribution systems lose water during distribution for several reasons. Specific water distribution losses depend on the type of distribution system. A piped water distribution system can lose water due to pipe failures or leaks. Open channels, ponds, reservoirs, and water basins can lose water from seepage through the soil, surface evaporation into the air, and plant consumption. An open channel, gravity flow water distribution system has operational discharges. Operational discharges are excess flows discharged from a channel into another channel or drain. Operational discharges can result from: carriage water that is required to fill and empty the reaches of sloping channels; excess water delivered to a channel to ensure adequate and constant delivery to the water users; increases in water user flexibility for water ordering and delivery scheduling; and terminating water deliveries during rainfall events, storm runoff, and flood flows.

The Imperial Irrigation District has an open channel gravity flow water distribution system. Its water distribution system losses result from three major conditions: seepage, operational discharges, and evaporation. The Imperial Irrigation District's water distribution system losses have been reduced through the years by numerous water conservation and demand management programs and projects. The demand management programs and projects are described in detail in the Imperial Irrigation District Demand Management Section of this plan.

The City of Calexico uses additional water that is not metered and used by the City for various purposes such as street sweeping, fire department practice, flushing fire hydrants, flushing sewer lines, and broken water mains.



2.14 Reliability Comparison⁽¹⁾

Imperial Irrigation District's present perfected and contract water rights are highly unlikely to be affected by the usual state and regional drought conditions. Colorado River water is used by both the Upper Basin States (Colorado, New Mexico, Utah, and Wyoming) and the lower basin states (Arizona, California and Nevada), as well as by Mexico. Assuming drought conditions on the Colorado River, California's 4.4 million acre-feet water apportionment is not likely to be impacted due to the massive storage quantities in the Colorado River reservoir system and the structure of water priorities. Arizona's Central Arizona Project must reduce its water diversions by one million acre-feet before any other lower basin water entitlement is affected. Additionally, Imperial Irrigation District's 2.6 million acre-feet of present perfected water rights theoretically protect its water users unless changed by future legislative action.

Imperial Irrigation District holds legal titles to all its water and water rights in trust for landowners within its service area (California Water Code §§20529 and 22437; *Bryant v. Yellen*, 447 U.S. 352, 371 (1980), fh.23.). While groundwater in the Imperial Unit is not used for commercial or major sources of water due to the high salt content, Imperial Irrigation District's Colorado River water supply is consistent and reliable.

The selected average or normal water year for this report is 1995 as it was the median water use year from 1994 through 1998. For the purposes of this plan, the "single dry water year" term is changed to "single reduced demand water year" as Imperial Irrigation District's senior water rights are such that drought conditions have never impacted its water supply. Thus for the purpose of this plan, 1992 was selected as the "single reduced demand water year" as this year had the lowest Imperial Irrigation District water usage during the 1989 to 1998 time period. In



1992, Imperial Irrigation District's available water supply was calculated to be 3,463,992 acre-feet.

As illustrated in Table 3, Imperial Irrigation District does not have a quantified water right but instead is allotted the right to use flows within a 3.85 million acre-feet agricultural entitlement. Four agencies share this entitlement, and the right to use these flows is prioritized with the highest priority water user diverting flows first, followed in order of priority by the other three agricultural entities. Thus, Imperial Irrigation District's third priority water right gives it the right to use whatever flows it can put to reasonable and beneficial use after diversions by the Palo Verde Irrigation District and Yuma Project Reservation Division. Coachella Valley Water District holds the last priority to this agricultural entitlement, and is legally entitled to use whatever flows remain from the 3.85 million acre-feet allotment that have not already been diverted by the first three priority holders. Thus, in any year each of the agricultural water users' available water supplies can be determined by subtracting the annual diversions of the higher priority water users from the 3.85 million acre-feet agricultural entitlement. In 1992 Imperial Irrigation District's available water supply was calculated by subtracting Palo Verde Irrigation District and Yuma Project Reservation Division diversions (386,008 acre-feet cumulatively) from the 3.85 million acre-feet entitlement, for a 3,463,992 acre-foot supply. However, Imperial Irrigation District's 1992 consumptive use was only 2,572,659 acre-feet so the remaining 1,277,341 acre-feet of flows would have been available for Coachella Valley Water District and lower priority Colorado River contractors.

The Imperial Irrigation District's lowest water use years during the 1989 through 1998 time period, were 1991 and 1992 with 1992 being lower than 1991. The term "multiple dry water years" is changed to "multiple reduced demand water years." Historically, the most recent



California drought period was from 1987 to 1992. For the ten year period from 1989 through 1998, the Imperial Irrigation District's lowest water use years were 1991, 1992, and 1993 (See Table 9).

Table 9⁽¹⁾ Imperial Irrigation District Annual Water Supply Reliability*					
			Multiple Reduced Demand Water Years		
	Average/Normal Water Year (1995)	Single Reduced Demand Water Year (1992)	Year ¹ (1991)	Year ¹ (1992)	Year ³ (1993)
Water Use ¹	3,070,582	2,572,659	2,898,963	2,572,659	2,772,148
Water Supply ²	3,373,233	3,463,992	3,375,173	3,463,992	3,457,909
Unit of Measure: Acre-Feet					

¹ Decree accounting consumptive use from the *Compilation of Records in Accordance with Article V of the Decree of the Supreme Court of the United States in Arizona v. California Dated March 9, 1964* Calendar Years 1991, 1992, 1993, and 1995, by the U.S. Department of the Interior Bureau of Reclamation Lower Colorado Region.

² Water Supply calculated using data from the *Compilation of Records in Accordance with Article V of the Decree of the Supreme Court of the United States in Arizona v. California Dated March 9, 1964* Calendar Years 1991, 1992, 1993, and 1995, by the U.S. Department of the Interior Bureau of Reclamation Lower Colorado Region.

* Includes 111 Calexico Place Project

For the purposes of this report and compliance with the Urban Water Management Planning Act, three years were selected to estimate a minimum annual water supply. The selected three years are 2001, 2002, and 2003. If during the years 2001, 2002, and 2003 there were a minimum water volume supply from the Colorado River, it would be 3.1 million acre-feet according to a voluntary self imposed cap proposed in the QSA.

Under a worst case water supply scenario, the Imperial Irrigation District is confident that urban water users (which comprise less than two percent of its annual water deliveries) can be assured delivery of their required water supply. Due to its present perfected water rights and the relatively small water demand of non-agricultural water users, the Imperial Irrigation District would not reduce or cut back urban water deliveries even in years of reduced deliveries. Since its



inception in 1911, the Imperial Irrigation District has never been denied the right to divert the amount of water it has requested for agricultural purposes and other beneficial uses.

2.15 Emergency Preparedness Plan⁽¹⁾

Emergency actions and procedures to be taken by Imperial Irrigation District Water Department staff during an emergency or time of disaster are described in the Emergency Preparedness Plan (EPP). The EPP includes required staff action and procedure to respond to events that impair water operation of canals, laterals, drains, dams, and other facilities. These responses are not normal operation and maintenance activities. Generally, any occurrence that requires an immediate response is classified as an extreme event or emergency.

The EPP defines the role each responsible employee will play during an emergency. Water Department staff conducts emergency and/or disaster response planning in the Water Control Center. Coordination of staff with other departments will take place in the General Manager's conference room. All American Canal River Division staff planning will be centered in the Imperial Dam Control House. Other staff meet and coordinate actions at designated areas.

Established actions and procedures exist for extreme events and emergencies that endanger operation of the water system. Possible emergencies/extreme events that endanger operation of the water system could include: earthquakes, storms, rain, runoff from desert washes, flooding, facility or structure damage, power outages, fire, vehicles in canals, equipment theft/vandalism, acts of terrorism, or other disaster. The Imperial Irrigation District's water delivery and drainage systems do not totally shut down during an emergency.

The Imperial Irrigation District has conducted emergency preparedness exercises in the past. Emergency preparedness exercises will be updated with the development of new



emergency preparedness exercises. Water Department staff trained and participated with the U.S. Department of the Interior Bureau of Reclamation's Tabletop Exercise for emergency preparedness.

For the cities in the Imperial Unit there is a ten-day storage holding capacity requirement. The Imperial County Office of Emergency Services requires this storage holding capacity for cities (Imperial Irrigation District, 1998, p.22)

Currently the City has a holding capacity of 5 days and will range up to 7.5 days in the year 2020 and diminish to 7 days in the year 2025. The holding storage volume includes treated and untreated water. The City is in the process of awarding a bid to construct a 6 MG reservoir which would be in operation in the year 2008 and will increase the holding storage capacity from 5 days to 6 days.

2.15.1 Emergency Response Plan⁽³⁾

The purpose of this Emergency Response Plan (ERP) is to provide Calexico Water Treatment Plant (WTP) with a standardized response and recovery protocol to prevent, minimize, and mitigate injury and damage resulting from emergencies or disasters of man-made or natural origin.

The ERP also describes how Calexico WTP will respond to potential threats or actual terrorist scenarios identified in the vulnerability assessment (VA), as well as additional emergency response situations. Included in this ERP are specific action plans that will be used to respond to events and incidents.

2.15.2 Goals

The goals of this ERP are to:



- Rapidly restore water service after an emergency.
- Ensure adequate water supply for fire suppression.
- Minimize impact and loss to customers.
- Minimize negative impacts on the public health and employee safety.
- Provide emergency public information concerning customer service.

2.15.3 Requirement

This ERP has been designed to comply with Section 1433(b) of the Safe Drinking Water Act (SDWA) as amended by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Public Law 107-188, Title IV – Drinking Water Security and Safety), California Government Code Section 8607.2 – Public Waterworks Standards , Section 64560.

Calexico WTP has provided the required certification to the United States Environmental Protection Agency (USEPA) that this emergency response plan incorporates the results of the VA completed for the system and includes plans, procedures, and identification of equipment that can be implemented or used in the event of a terrorist attack on the water system. Calexico WTP has also provided a copy of the ERP to the local California Department of Health Services (CDHS) Drinking Water Field Operations Branch District Office.

2.15.4 Emergency Water Supply Calculations

There are amounts of water needed for various durations. Typical residential water usage in the United States is on the order of 300 to 500 gallons per residence per day, or 100 to 250 gallons per capita per day. Although these amounts can typically be significantly reduced during crisis situations, Calexico WTP has found it useful to develop an estimate for the quantity of



supplemental water required for a number of potential outage scenarios. These estimates are shown in Table 10.

Table 10⁽³⁾		
Estimates of Supplemental Water		
Outage Period	Number of Customers (Service Connections) Affected	Quantity Needed
1 hour	35,000	35,000*4.17gal=145,950 Gals
12 hours	35,000	35,000*50gal=1,750,000 Gals
Outage Period	Number of Customers (Service Connections) Affected	Quantity Needed
1 day	35,000	35,000*100 gals=3,500,000 Gals
2 days	35,000	35,000*100*2=7,000,000 Gals
1 week	35,000	35,000*100*7=24,500,000 Gals

2.15.5 Estimated Emergency Supply of Water

Calexico WTP has estimated the amount of water storage available in the system under an emergency situation according to the following formula:

Emergency supply of water = (amount of storage + backup/emergency supply)/(system demand)

Calculations for Calexico WTP: Amount of storage = 8,000,000 gallons

System Demand = 4,001 gpm Average, 12,000 gpm

Emergency Supply = 1.4 days at Average Demand, .4 days at Max Demand

2.16 Water Recycling and Wastewater Systems⁽¹⁾

The Imperial Irrigation District does not operate or maintain facilities for potable water recycling, wastewater generation, wastewater collection, or wastewater treatment. The Imperial Irrigation District does allow the reuse of its drainage water within the Imperial Unit service area (Imperial Irrigation District, 1998, Water Rates Schedule No. 5 Reuse of Drainage water).



The City of Calexico has a wastewater treatment plant. City wastewater information is listed in

Table 11. Currently, there are no plans for the City of Calexico to recycle their wastewater.

Table 11						
Wastewater Generation and Collection						
City of Calexico	2005	2010	2015	2020	2025	2030
Wastewater generated in Service Area	985.5	1387	1825	2445.5	3175.5	3,750
Wastewater Generated By 111 Calexico Place Project	0	17	60	77	77	77
Units of Measure: MGY = Million Gallons per Year		27	95	135	135	135

* Includes 111 Calexico Place Project



3.0 Current and Projected Demands⁽¹⁾⁽²⁾

The City's historic demand pattern is difficult to track because the City system is not fully metered. Because of this situation historical demand data is available only in totals. The 2007 UWMP lists the City's historic demands.

Projected water demands are based on the historical data and good engineering practices. The City currently predicts water demand by population equivalent (gallons per day per person or employee). Under the City's convention, the annual water demand for this Project will be 0.46 MG per year. The result is based on 40 people per acre times 232 acres times 50 gallon per person per day and the foregoing total divided by 1,000,000.

Demand Management⁽¹⁾

The City is a signatory to the California Urban Water Conservation Council's MOU executed on June 11, 1991 and reports annually on its implementation of Best Management Practices for Water Conservation. This reporting satisfies the SB 610 descriptions for demand management in the Normal Year.

Current and projected water supplies are equal to current and projected water demands for municipal water users.

Supply and Demand Comparison⁽¹⁾

Urban water management plans describe current urban water use and specify measures that conserve and efficiently use urban water supplies. The California Urban Water Management Planning Act requires both public and privately owned water suppliers providing water for municipal purposes either directly or indirectly to adopt an urban water management plan every



five years if the supplier (1) provides water to more than 3,000 customers for municipal purposes or (2) supplies more than 3,000 acre-feet of water annually for municipal purposes.

The City of Calexico is within the Imperial Irrigation District's water service area and the District supplies more than 3,000 acre-feet of water per year for urban water use. Less than two percent of the Imperial Irrigation District's untreated water is ultimately used for urban purposes and is provided indirectly to consumers through a variety of public and private treatment agencies.

Increased water demand in the Imperial Unit will be offset in future years with increased water conservation measures.

The selected average or normal water year is 1995. The Imperial Irrigation District's yearly median water use volume for 1994 through 1998 is equal to 1995's volume of water. For the purposes of IIDs UWMP plan the "single dry water year" term is changed to "single reduced demand water year."

The 1992 annual water use volume was lower than the 1991 annual water use volume. The Imperial Irrigation District's lowest water use year during the 1989 through 1998 time period, was the years 1991 and 1992. Table 12 lists the supply reliability and demand comparison for a single reduced demand water year and for multiples reduced demand water years.



Table 12 ⁽¹⁾ Supply Reliability and Demand Comparison*					
			Multiple Reduced Demand Water Years		
	1995 Avg./Normal Water Year	1992 Single Reduced Demand Water Year	Year 1 (1991)	Year 2 (1992)	Year 3 (1993)
Imperial Irrigation District Supply Totals ¹	3,373,233	3,463,992	3,375,175	3,463,992	3,457,909
Imperial Irrigation District Demand Totals ²	3,070,582	2,572,173	2,898,963	2,572,659	2,772,148
Difference	302,651	891,333	476,210	891,333	685,761
Unit of Measure is Acre-feet/Year					

¹ Water supply calculated using data in the *Compilation of Records in Accordance with Article V of the Decree of the Supreme Court of the United States in Arizona v. California Dated March 9, 1964*, Calendar Years 1991, 1992, 1993, and 1995 by the U.S. Department of the Interior Bureau of Reclamation Lower Colorado Region.

² Decree accounting consumptive use from the *Compilation of Records in Accordance with Article V of the Supreme Court of the United States in Arizona v. California Dated March 9, 1964* Calendar Years 1991, 1992, 1993, and 1995, by the U.S. Department of the Interior Bureau of Reclamation Lower Colorado Region.

* Includes 111 Calexico Place Project.



4.0 Sufficiency Analysis ⁽¹⁾

SB 610 requires that the Lead Agency make findings related to supply sufficiency under the normal, single dry and multiple dry year planning scenarios. This chapter makes the comparisons between water demands and supply based on the supply data and analysis and the demand data and analysis outlined in this report.

4.1 Normal Year Sufficiency Analysis

Supply is sufficient to meet demand throughout the planning horizon.

4.2 Dry Year Sufficiency Analysis

Table 13 outlines the supply and demand patterns under Normal, Single Reduced Demand and Multiple Reduced Demand Years. In all cases, supply is sufficient to meet demand.

Table 13 Reduced Demand Water Year Sufficiency Analysis*					
			Multiple Reduced Demand Water Year		
Agency	Normal	Single Reduced Demand Water Year	1	2	3
Supply in AFY	3,373,233	3,463,992	3,375,173	3,463,992	3,457,909
Demand in AFY	3,070,582	2,572,659	2,898,963	2,572,659	2,772,148
Sufficiency (Supply Less Demand)	302,651	891,333	476,210	891,333	685,761

* Includes 111 Callexico Place Project

4.3 Regulatory Requirements for Delivery of Water Supply

The City's supply sources comply with all current regulatory standards. The City will continue to monitor its system in accordance with its permit from the Department of Health Services.



5.0 Urban Water Shortage Management ⁽¹⁾

It is unlikely that the urban water supply of Imperial Irrigation District would ever be affected, even under shortage or drought conditions on the Colorado River. Urban water use in the Imperial Unit makes up less than two percent of the total water delivered by the Imperial Irrigation District. Under a worst case water supply scenario, the Imperial Irrigation District is confident it can meet the demands of urban water users.

Due to the high quality of the Imperial Irrigation District's water rights, Colorado River flows, and the storage facilities on the Colorado River, it is highly unlikely that Imperial Irrigation District's water supply will be affected, even in dry years. The entire southern California region, both urban and agricultural, would be in a severe drought emergency before the Imperial Valley's water supply is threatened. Historically, the Imperial Irrigation District has never been denied the right to divert the amount of water it has requested for agricultural irrigation and other beneficial uses.

In the event that there is a water shortage in the Lower Colorado River Basin, the Imperial Irrigation District/San Diego County Water Authority water transfer agreement states that both agencies will share, on a pro-rata basis, any reductions in water to Imperial Irrigation District should a shortage declaration by the Secretary of the Interior for the Lower Colorado River Basin affect the Imperial Irrigation District's water conservation and transfer programs. If the amount of usable storage water in Lake Mead is less than 15 million acre-feet and the unregulated inflow into Lake Powell is forecasted to be less than 8.8 million acre-feet, then the Imperial Irrigation District and the San Diego County Water Authority will meet and confer to discuss a supplemental water transfer agreement in anticipation of the shortage.



Should operating conditions on the Colorado River indicate Imperial Irrigation District may be impacted by reductions in water deliveries, the Imperial Irrigation District will notify all of its water users by mail and will conduct an educational outreach program in conjunction with the local media and municipal water systems. The notice will request all water suppliers, and in particular residential, industrial, and commercial water users, to conserve water on a voluntary basis. Urban water suppliers will be responsible for notifying their customers and implementing their own voluntary water conservation measures and programs.

Urban water supply reductions in the Imperial Unit are not likely to occur during the next twenty years. Action stages are noted in this plan in order to comply with California's Urban Water Management Planning Act requirements and have not been approved by any of the agencies participating in this plan. Urban water supply shortage stage one is voluntary, has cut back conditions of less than 15 percent, and is estimated to provide up to 79 percent of the reduction goal for urban water suppliers. Urban water supply shortage stage two is voluntary, has cut back conditions of 15 percent to less than 25 percent, and is estimated to provide 7 to 12 percent of the reduction goal for urban water suppliers. Urban water supply shortage stage 3 is mandatory, has cut back conditions of 25 percent to less than 35 percent, and is estimated to provide the remainder of any reduction goals for urban water suppliers. Mandatory provisions to reduce individual urban consumer water use are beyond the jurisdiction of the Imperial Irrigation District. Any urban water use reductions or restrictions are the responsibility of individual urban water suppliers who treat and distribute water within the Imperial Unit. This includes enforcement of any policies to achieve targeted goals. The Imperial Irrigation District does not expect to enter a stage one or greater urban water shortage at any time over the next 20 years.



6.0 Demand Management Measures⁽¹⁾

The Imperial Irrigation District invests money to water conservation programs, which focus on the canals, laterals, and agricultural water management. The City is responsible for its conservation program within the urban area, which is currently being implemented.

6.1 Imperial Irrigation District Demand Management⁽¹⁾

The Imperial Irrigation District and its agricultural water users have a long history of efficient water use and agricultural based water conservation or demand management programs. The Imperial Irrigation District and its agricultural water users together have invested more than \$625 million towards water conservation efforts over the past 50 years. Completed programs include concrete lining of canals and laterals, seepage recovery systems, regulating reservoirs, lateral interceptors, distribution system automation, on-farm tailwater recovery systems, 12-Hour Deliveries, non-leak gates, irrigation water management, and several operational, administrative, educational, and cooperative programs aimed at reducing operational losses and recovering discharges.

The Imperial Irrigation District is a regional water supplier, not a public water system, and currently does not sponsor urban water conservation programs. Over 98 percent of Imperial Irrigation District's water supply is delivered for agricultural purposes, so the demand management measures and best management practices described in the Urban Water Management Planning Act are not appropriate measures of Imperial Irrigation District's conservation efforts. Instead, Imperial Irrigation District has promoted large scale water conservation efforts using programs that do not negatively affect agricultural businesses, water users, or the Imperial Valley economy. Water conservation is a key component of Imperial



Irrigation District's water management efforts as each unit of water conserved frees up a unit for other uses.

6.1.1 Imperial Irrigation District Water Conservation Programs and Projects⁽¹⁾

In 1940, an Imperial Valley Drainage Advisory Committee was formed with representatives of the Imperial Irrigation District, U.S. Department of Agriculture Soil Conservation Service, Farm, Credit Administration, and the University of California. The committee supervised a 10-year investigation of drainage methods and determined criteria for Imperial Valley drainage (U. S. Department of Agriculture Soil Conservation Service, University of California Agricultural Experiment Station, & Imperial Irrigation District, 1981, p. 3). From 1940 through 1994, the Imperial Irrigation District has cumulatively designed/installed an estimated 33,175 miles of on-farm tile drainage (Imperial Irrigation District, 1990, pp. 25-26). Table 14 lists Imperial Irrigation District Water Conservation Projects and Programs.



Table 14
Imperial Irrigation District
Water Conservation Programs and Projects

Water Conservation	Year	Activity Summary
On-Farm Tile Drainage	1940 - present	IID in cooperation with USDA Soil Conservation Service designed and installed tile drainage systems to remove water and salts from the soil.
Seepage Recovery Drain No. 2	1947 - present	All American Canal water seepage returned to canal. Each year approximately 11,400 acre-feet are conserved (annual average 1964 thru 1994).
Seepage Recovery Drain No. 1	1948 - present	All American Canal water seepage returned to canal. Each year approximately 1,900 acre-feet are conserved (annual average 1988 through 1994).
Seepage Recovery Drain Pumps 4, 5, 6, 11, 12, & 34	1951 - present	All American Canal water seepage returned to canal. Each year approximately 10,000 acre-feet are conserved (total annual average 1988 through 1994).
Concrete Lined Canals & Laterals	1954 - present	Cumulatively 3,679 miles of canals, laterals, and head ditches have been lined (privately owned, IID owned, and MWD funded through 1994).
Automation of Water Distribution System - installation and operation	1958 - present	A telemetry system, installed in 1958, automated the structures on the upper reaches of the main canals and used telephone lines to access remote sites. In the 1990's a Supervisory Control and Data Acquisition System (SCADA) was installed that use computers and a radio/microwave communication network. A new Water Control Center was completed 1993.
Drain Pipelines	1962 - present	Cumulatively installed 117 miles of drain pipelines, 1962 through 1994.
East Highline Seepage Recovery	1967 - present	East Highline Canal water seepage returned to canal with 12 pump systems. Each year approximately 14,350 acre-feet are conserved (annual average 1967 through 1994).
East Highline Seepage Recovery	1967 - present	East Highline Canal water seepage returned to canal with 12 pump systems. Each year approximately 14,350 acre-feet are conserved (annual average 1967 through 1994).



Table 14 Continued
Imperial Irrigation District
Water Conservation Programs and Projects

Water Conservation	Year	Activity Summary
Regulating Reservoirs - construction and operation	1976 - present	Reservoirs built and IID funded include Singh Reservoir 1976, Sheldon 1977, Fudge 1981, Sperber 1983. Reservoirs built and MWD funded include Carter Reservoir 1988, Galleano Reservoir 1991, Bevins Reservoir 1992, Young Reservoir 1996, Russell Reservoir 1996, and the Willey Reservoir 1998 (total storage capacity 3,372 acre-feet).
13-Point Water Conservation Advisory Board	1976 - 1987 1979 - present	<u>Program to reduce tailwater, canal seepage, and operational</u> Make additional water conservation recommendations to IID Board of Directors.
21 -Point Water Conservation Program	1980 - 1987	Policies and procedures for ordering water, operating the delivery system, and assessing extra charges for excessive water use.
Water Conservation Program	1981 - present	IID hired personnel to staff its Water Conservation Program.
Irrigation Scheduling Program	1981 - present	Assist growers to reduce on-farm tailwater and tilewater.
Aquatic Weed Control	1981 - present	IID supported research to develop/built fish hatchery to produce the sterile Triploid Grass carp fish that feeds on hydrilla an aquatic weed that clogs canals and drains.
Field Irrigation Evaluations	1982	Improve Irrigation Management on-farm.
Modified Demand Irrigation Trial	1984	Water Orders could be terminated up to four hours before or after the regular ending time.
Irrigation Training Program	1984	For growers and irrigators to reduce the amount of on-farm tailwater.
IID Water Conservation	1985 - 1987	<u>Plan with yearly updates.</u>
East Highline Canal Seepage and System Improvement Study	1985 - 1989	Cooperative water conservation study to identify water conservation opportunities. IID and U.S. Department of the Interior Bureau of Reclamation study.
Tailwater Recovery Demonstration Program/Tailwater Return Systems	1985 - 1990; 1991 - present	Five year demonstration with five tailwater return systems. Developed 25 Tailwater Return Systems from 1991 through 1995 with MWD funding.
12-Hour Delivery Program	1986; 1989 - present	Program allows water deliveries in 12-hour increments.



Table 14 Continued
Imperial Irrigation District
Water Conservation Programs and Projects

Water Conservation	Year	Activity Summary
Lateral Fluctuation Study	1986, 1987	Cooperative water conservation study to identify water conservation opportunities. IID & US Water Conservation Laboratory of Phoenix, Arizona study of causes/effects of water level fluctuations for open channel irrigation system.
Irrigation Field Trials	1987, 1988	Determine effect of various soil moisture conditions on sugar beet tonnage and sugar content.
15 -Point Water Conservation Program	1987 - present	This program replaced the 13-Point and 21 -Point Water Conservation Programs.
IID/MWD Water Conservation and Transfer Agreement	1989 - present	Project construction took place from 1990 to 1998 and then starts 35-year water transfer period. Many water conservation studies and reports were completed during the program.
Non-Crop Irrigation Demand Reduction Program	1991 - 1992	A limit on the length of time water may be applied to flood lands not seeded for crop.
Crop Specific Modified Irrigation Program Pilot Program	1991	Evaluate removal or irrigation water from alfalfa during the period August 1 through October 15, 1991.
IID/SDCWA Water Conservation and Transfer Agreement	1995 - present	In 1995, IID and San Diego County Water Authority (SDCWA) signed an MOU to pursue a conservation and transfer agreement. In 1998, IID and SDCWA signed a water conservation and transfer agreement.
Quantification Settlement of Colorado River Water Supply Issues	1999	IID, CVWD, MWD, SDCWA, State of California, and the U.S. Bureau of Reclamation issued key terms for a quantification settlement of Colorado River water supply issues.

6.2 City of Calexico Demand Management⁽¹⁾

The City of Calexico has proposed a new project to improve their water treatment plant and distribution system. It is estimated that the improvements will address the City of Calexico's growth through the year 2025. The construction of: (a) six additional filters with twelve million



gallon per day capacity, (b) a twelve million gallon per day densator clarifier, and (c) two 4,000 gallon per minute distribution pumps at the main treatment plant. This improvement is the second phase of a 24-inch distribution main extending from Highway 111 East to Highway 98 and from the All American Canal to the satellite pump station. The pump station includes a six million gallon treated storage reservoir. With these improvements, the City of Calexico will be able to increase available fire flows to 4,000 - 5,000 gallons per minute to allow for larger industrial and commercial growth in the northeast quadrant of the city where major developments are taking place.

The City of Calexico has completed Phase I and II of the proposed improvements to Water Treatment Plant and Distribution System. This includes construction of six additional filters with twelve million gallon per day capacity, a twelve million gallon per day densator clarifier, and two 4,000 gallon per minute distribution pumps at the main treatment plant. Pending from the anticipated improvements is Phase III which is the satellite pump station with a six million gallon treated storage reservoir, which is programmed for the next fiscal year.

Currently, water meters are installed on all new construction. Most of the City of Calexico facilities are already metered but it is the City of Calexico's goal to install water meters on all of its facilities. The total water meters included in the system are approximately 5,365.

A leak detection program has yet to be implemented by the City of Calexico. It has recently been learned that leak detection equipment and training is available free of charge from the California Department of Water Resources. Therefore, the City of Calexico will be pursuing this opportunity.

The City of Calexico has a water main replacement program. Water distribution system improvements completed during the last five years have enabled the City of Calexico to improve



their distribution system's operating pressure. All old or deteriorating cast iron pipes have been replaced. The City of Calexico has also implemented a policy of immediately replacing leaks or broken water mains as soon as they are reported to the Water Department.

The City of Calexico's adopted General Plan and Zoning Ordinances set forth the City of Calexico's water conservation program. The adopted General Plan Open Space/Conservation Element provides the water conservation program in the area of water management. Water conservation policies pertaining to new construction and development are as follows:

1. All residential construction shall be required to install low-volume toilets showers and faucets.
2. New development projects should install water-conserving appliances (washing machines and dishwashers).
3. The usage of primarily drought-tolerant native plants shall be required through review and approval of landscaping plans by City of Calexico Staff.
4. Residential projects having common green areas and all commercial, manufacturing, and public projects shall be required to install automatic irrigation systems.
5. The usage of drip irrigation shall be required where feasible.
6. Alternative water conservation systems such as gray water usage in residences shall be examined and initiated if feasible.
7. New residential construction shall be pre-plumbed for reclaimed water through a dual on-site distribution system. Anticipated non-potable uses include landscaping, lawn maintenance and crop irrigation. All reclaimed water systems



will be in compliance with the State of California Regional Water Quality Board guidelines and basin objectives as well as CEQA and NEPA guidelines.

8. Residential units connected to the community sewage collection system shall not use salt-based water softeners.

Landscaping requirements for new development and construction is listed in the adopted zoning ordinance section pertaining to "property improvement standards." In general, installation of sprinkler systems is not required for landscaped areas in residential zones. Development projects within industrial zones are required to install landscaping with sprinkler systems in the front and side street setbacks. Code requirements for installation of landscaping and sprinkler systems are enforced as "general guidelines." When appropriate, new industrial development is encouraged to install low maintenance desert landscaping.



7.0 Conclusion

The demand calculated for the proposed Project has been included in water forecasts of the water supply agencies. In addition, the supplies necessary to serve the proposed Project, along with existing and future uses, have been identified in the water supply planning documents of the agencies. The actions necessary to develop these supplies have also been documented in the planning documents and this Water Supply Assessment report.

In addition; historically, agricultural water demand and use per acre per day range from approximately 5% to 30% more than its equivalent acreage converted to a composite of residential, commercial, industrial, and institutional use. Intuitively, the range could be greater for solely commercial use, such as the 111 Callexico Place.

The interim system to serve the 111 Callexico Place Project is a plausible option until the future 24" water is constructed in Sunset Blvd. and Jasper Road ⁽⁶⁾ and a future 30" sewer is constructed in Jasper Blvd ⁽⁶⁾. The systems that are designed for the interim condition are anticipated to be used for approximately 5 to 10 years. The interim systems may be conditions placed on the approved Tentative Tract Map and the Project will be required to ultimately connect to the Master Plan system as they become available.

The interim water system for the Project will provide a minimum pressure, in the future, greater than the required 20 psi with two fire hydrants running and the system under the load of peak daily flows.

Therefore, this report concludes that the City's total projected water supplies during the next 20 years are sufficient to meet the additional water demand resulting from the Project.